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DIESEL RAILWAY TRACTION

A Supplement illustrating and describing shunting practice in Diesel Railway Traction is presented with each copy of this week's issue.

The Budget

THE Budget has been accorded a general welcome which is expressive not only of present relief but of anticipation of further benefits to come, relief at the closing of "Bleak House" or "Hard Times," and a decided appetite for "Great Expectations." Next year, to pursue the Dickensian vein, we shall all, like Oliver, be asking for more, and, barring external disturbances, we shall probably get it, for the Budget is certainly cautious and conservative to a degree. The realised surplus for the past twelve months is £39,000,000, which, as usual, goes entirely to the reduction of debt, and the estimated surplus is placed at £29,100,000. Out of this sum the Chancellor proposes to restore in full the cuts made in unemployment benefit, a measure which commands universal approval, to restore one half the cuts in the pay of civil servants, teachers, police, defence forces, &c., which has been received with distinctly modified rapture and as an instalment on account, and to reduce the standard rate of income tax from 5s. to 4s. 6d., a measure of bare justice to the hard-pressed taxpayer who has also suffered other diminution of income. Nevertheless, for these reliefs much thanks; there is no doubt they will stimulate trade and industry generally, and will be none the less effective for being more psychological than substantial. The reduction on income tax operates over the past financial year; on surtax, for the financial year

ended April, 1933. The railways may be expected to benefit by increased activity in home industry, and perhaps by some further recovery in the export trade, to which the 25 per cent. reduction in motor horse-power duty is designed to contribute. The partial restoration of cuts in pay may also strengthen the demands for restoration of railway wage rates, but as we said last week, the companies would be only too happy if they could increase the purchasing power of their employees (and officers) without reducing that of their proprietors. The cuts are said to represent £3,660,000 in wages, but the companies' joint net revenue in 1933 was still $4\frac{1}{2}$ millions below 1931 when the cuts began to operate.

* * * *

The Week's Traffics

Returns of the four group railways for the past week compare with those for Good Friday week, 1933, and passenger train receipts are in consequence heavily down, and goods and coal earnings are up. Traffics of the Liverpool Overhead and of the Mersey for the week also show decreases. As the Irish railway week ends on a Friday the latest returns also go against those of a week in 1933 which included Good Friday traffics. Irish goods train receipts for the week are in every instance up, and so are both goods and passenger earnings for the year to date. Passenger traffics for the week are also up except for a decrease of £137 on the Belfast & County Down, but in noting the week's total increase of £8,800 on the Great Northern it must be remembered that at this time a year ago the strike was still prevailing. The company's total receipts for the year to date show an increase of £140,550.

| | 15th Week | | | Total. | Inc. or dec. | |
|-------------|-----------|------------|-----------|----------|--------------|--------|
| | Pass. &c. | Goods, &c. | Coal, &c. | | Year to date | % |
| L.M.S.R. .. | -219,000 | + 95,000 | + 66,000 | - 58,000 | + 865,000 | + 5.58 |
| L.N.E.R. .. | - 92,000 | + 45,000 | + 79,000 | + 32,000 | + 966,000 | + 8.60 |
| G.W.R. .. | - 84,000 | + 41,000 | + 15,000 | - 28,000 | + 271,000 | + 4.22 |
| S.R. | -125,000 | + 10,000 | + 10,000 | -105,000 | + 134,000 | + 2.70 |

* * * *

Railway Prosperity and Financial Policy

Issued as occasion serves, the American *Bulletin of Railway News and Statistics* seized the occasion of Mr. Joseph B. Eastman's first report to President Roosevelt on transportation to tell in picturesque language what it thinks of government ownership of railways. We commend our readers to page 678 for a very pretty piece of debating, but we would warn them to sit down to it with a salt cellar handy. The spirited author of the *Bulletin* begins riskily for his argument by showing how rapidly and steeply the financial conditions of the privately-owned railways of the U.S.A. have deteriorated since 1929. Under a continuance of similar industrial conditions it may safely be assumed that these railways would, within another few years, show quite as handsome a deficit as any of the state railway systems quoted. Is it, then, strictly logical to argue that the type of ownership of a railway system is the critical factor of profitability? From the *Bulletin's* own figures we should be inclined to draw the conclusion that whether or not railways pay depends ultimately not on who owns them, but on the general condition of industrial activity in the country served. And that, in its turn, depends on financial policy. In his address to the shareholders of the Midland Bank on January 26 last, Mr. McKenna remarked that nearly £300,000,000 of additional purchasing power had recently been put at the disposal of the public by the action of the Bank of England, and that this action had coincided with the revival of business activity—which, of course, has been reflected by the recent upward trend in railway prosperity here.

Travel without Tears

We hear of the case of a man who, being obliged to send his twelve-year old daughter unaccompanied to Ireland, acted on the advice of a well-known advertisement and "asked Mr. Milligan." The transport of the young must rank among the major problems to be faced by the District Passenger Manager at Euston, but the arrangements made were admirable and comprehensive. The lady was met at Euston, conducted to her seat in the train, and introduced to the guard. Meanwhile, a message had hastened ahead of her which provided for an escort from train to boat at Holyhead. At Kingstown she was met again and ushered into the train for her destination. Feeding and, no doubt, recreation of a sedentary sort beguiled the journey, so that the L.M.S.R. eventually delivered as serene a visitor as has set foot in the distressful island for some time. All this is excellent, provided a pampered public does not one day interpret Mr. Ashton Davies's advertisements too literally and ask Mr. Milligan for similar facilities for all and sundry. There are travellers as sorely in need of shepherding as any twelve-year-old, but the company may eventually be obliged to draw the line somewhere. That will be a delicate task, and rather than attempt to indicate how it should be done we propose to stand aside and "Ask Mr. Milligan."

* * * *

Overseas Railway Traffics

Argentine railways have improved their traffic position during the past fortnight, except the Buenos Ayres Great Southern, which is now only £5,000 to the good for the year to date. The traffic decrease of the Buenos Ayres & Pacific has been reduced during the two weeks by £20,000, that of the Buenos Ayres Western by £45,000, and that of the Central Argentine by £21,000. For the year to date the Entre Rios Railways record an increase of £18,500. Antofagasta traffics have been steadily improving and now show an advance of £56,890 for the 15 weeks of the current year. The return published last week for the Bombay, Baroda & Central India showed that for the year ended March 31 the company had a traffic increase of £318,225. On the Canadian Pacific the receipts for the past fortnight have shown an improvement of £147,200, bringing the aggregate gross increase up to £930,000.

| Railway. | No. of Week. | Weekly Traffics. | Increase or Decrease. | Aggregate Traffic. | Increase or Decrease. |
|--------------------------------|--------------|------------------|-----------------------|--------------------|-----------------------|
| Buenos Ayres & Pacific .. | 41st | 148,000 | + 14,000 | 4,421,000 | - 74,000 |
| Buenos Ayres Great Southern .. | 41st | 212,000 | + 8,000 | 8,331,000 | + 5,000 |
| Buenos Ayres Western .. | 41st | 95,000 | + 25,000 | 2,735,000 | - 27,000 |
| Central Argentine .. | 41st | 176,000 | + 16,000 | 6,790,000 | - 659,000 |
| Canadian Pacific .. | 15th | 432,600 | + 80,600 | 6,365,000 | + 930,000 |
| Bombay, Baroda & Central India | 1st | 170,100 | + 5,025 | — | — |

* * * *

Indian Railway Conference Association

In view of the retirement of Mr. C. V. Bliss, C.I.E., from the position of General Secretary and Director of Wagon Interchange, Indian Railway Conference Association—after 21 years' service in the former position—recorded in our personal columns this week, it is apposite here to outline the scope of the Conference Association and some of the duties performed by the General Secretary. The Association is an inter-railway co-ordinating agency, which, though in close touch with the Railway Board, is not under that authority. Its activities are very wide, embracing all railways in the sub-continent, and are dealt with primarily by sections of Civil Engineers, Mechanical Engineers, Electrical Engineers, Personnel and Medical Officers, and also by committees of Operating, Commercial, Audit and Accounts Officers and Signal Engineers as well as *ad hoc* committees. The recommendations of these sections and committees are dealt with at con-

ferences of the Agents (General Managers) held twice annually. Since 1927 the Secretary of the Association has also been Director of Wagon Interchange, a post carrying responsibility for the control and distribution of the 150,000 wagons in the broad gauge wagon pool, as well as for the staff employed by the Association at the principal broad gauge interchange junctions, for the purpose of supervising, in neutral capacity, the expeditious interchange of stock between railways, in good and safe condition. The post of secretary is therefore exceedingly onerous and demands infinite tact and patience.

* * * *

Transport in Argentina

Recent messages from Buenos Aires as to the appointment of a commission to consider a general transport reorganisation in Argentina would appear to confuse two different things. For some time past a commission appointed by the Municipality of Buenos Aires to study the problem of co-ordinating transport in the city has been sitting, and has recently produced a majority and a minority report. These reports agree in recommending the formation of a joint concern somewhat in the nature of the London Passenger Transport Board, differing only, apart from minor details, in their views as to whether this concern should be a national or a municipal entity. It is also understood that the President is considering the question of appointing a committee on which the railways, commerce, industry, &c., would be represented, for the purpose of carrying out a thorough investigation concerning the situation of the railway companies, and making representations to the Government in regard to the remedial measures that should be adopted, but there is no official intimation as yet of the appointment of the committee or of the selection of its personnel.

* * * *

Special Saturday Schedules

The new early summer issue of the London Midland & Scottish time-tables, to operate from April 30 next, contains one feature which we have urged in these columns. On the Midland Division the times of many of the principal expresses are to be modified on Saturdays, considerably more time being allowed in the running in an endeavour to secure better punctuality with week-end loads. It is but a modest experiment in this direction which is being made as yet, and the complementary task—that of issuing entirely independent Saturday tables—has not yet been taken in hand, with the result that even more fearsome complexity than hitherto attaches to the search for trains on some of the services principally affected by Saturday alterations. There is little else of note among the L.M.S.R. alterations, which are reviewed on page 677, other than the departure of the morning Irish Mail from Euston at 8.45 instead of 8.30 a.m., and the half-hour cut in the schedule of the 4.30 p.m. express from Glasgow to Liverpool and Manchester. The accelerations between Glasgow and Aberdeen are disappointing, as on the five principal services each way they leave the overall average speed at precisely 40 m.p.h., which could hardly be described as an enterprising figure in the year of grace 1934. On the Highland Section the extremely leisurely progress now current is to be maintained practically in *statu quo ante*.

* * * *

The Dandy Cart

Just 100 years ago anything which was new and showy was described as "just dandy." Big wheel and small wheel bicycles (velocipedes) which were just coming into fashion were styled dandy horses. A corps of veloci-

pedites was to be raised to be called the dandy dragoons. The name afterwards came to be applied to a railway carriage drawn by a horse. The Duke of Wellington possessed a reserved railway carriage known as his dandy coach, but the horse dandy or dandy cart was a carriage for the horse itself. Hitched at the end of a batch of wagons, the dandy cart was intended to enable the horse to husband its strength by riding, instead of trotting, in the rear of the loaded wagons on the many down grades of early railway lines. A horse was not long in learning how to get on to the dandy cart, even when it was in motion, the end of the dandy being left open for this purpose. One of the first railwaymen when asked if the horses liked this sort of treatment replied that they fairly "laughed again—you would hardly believe it, but there and then I had not the dandy and the horse was trying to get into a chaldron wagon." The dandy cart form of railway traction was employed on the North country colliery railways until as late as 1907, when the steam locomotive finally superseded these riding horses.

* * * *

Transport Developments in 1933

The annual reviews of transport developments presented by Mr. R. Bell, Assistant General Manager, L.N.E.R., to the Metropolitan Graduate and Student Society have been recorded in these pages for a number of years. A report of last Tuesday's address, at which the L.N.E.R. (London) Debating Society was also present, appears on page 679. Mr. Bell was able to quote more encouraging figures of industrial progress and railway receipts than on the last occasion, but he was careful to avoid optimistic prophecy. His statement that no country is finding its passenger traffic lucrative is truly remarkable, but, of course, cannot be taken by itself. Obviously, it would be impossible to follow the logical course and cease to cater for passenger traffic, but the statement does emphasise the importance of the most careful scrutiny of this department of railway operation with a view to the possibility of making it profitable. In this connection, Mr. Bell's references to the introduction of high-speed light railcar units deserve attention, in view particularly of the extension of this policy in foreign countries, such as Holland, where, as from May 15 next most of the important internal lines are to be worked by such units. Furthermore, Mr. Bell did not neglect the growing importance to the railways of transport services by road and air.

* * * *

Pennsylvania Railroad Economies

A notable increase in operating efficiency is shown by the complete income statement of the Pennsylvania Railroad Company for 1933, which has just been prepared for inclusion in the annual report. Although the gross operating revenues, which amounted to \$324,715,813, were \$6,677,643 less than in 1932, operating expenses were reduced by \$15,243,255. There was also a saving of nearly a million dollars in hire of equipment, and taxes were three and three quarter millions lower. As a result, the net railway operating income for 1933, amounting to \$61,976,858, was \$12,844,820 greater than in 1932. It is of particular interest to notice that, out of the total reduction of more than \$15,000,000, the largest single item was a cut of \$9,516,107 in transportation expenditure, which represents the direct costs incurred in the movement of traffic. Outlays upon maintenance were lowered only a trifle over two and one-half millions, and of this sum \$2,420,949 was in maintenance of equipment, a reduction of only 3.7 per cent. The operating ratio for the year was cut to 69.8 per cent. This is the lowest operating

ratio recorded since 1906, a year in which wages material, prices, and nearly all other basic costs of operation were much lower than at present. The net income of \$19,281,169, representing the amount earned upon the capital stock, exceeded that of 1932 by \$5,707,633. The fact that this item did not increase in the same proportion as the net railway operating income is shown to be due chiefly to lower income from dividends on various stocks owned by the company, largely in consequence of the stagnation in general industry and commerce, especially during the first half of the year under review.

* * * *

Freight Rates in Spain

The power to raise their freight rates by 15 per cent. has now been granted to the Spanish railway companies and has given rise to considerable clamour in certain organs of the press, which are loud in declaring that substantial increases in the prices of the necessities of life are inevitable. The Norte and M.Z.A. Companies have replied to this by publishing figures showing the actual percentage increases in cost per kilogramme conveyed, for the principal foodstuffs, and demonstrating that the amount is so small in most cases that it may be disregarded. *Ferrocarriles y Tranvías* points out that the real effect of these agitations is to incite other circles to put prices up beyond what is justified and reap a harvest for themselves, while the railways receive all the blame and abuse that follows. In no case does the increase, even if fully applied, come to a centimo and a half per kilo, and it is generally much less. Spanish rates will still rank among the lowest in Europe. The two railways have also issued a reply to the charge frequently made that their difficulties are due to excessive salaries paid to the higher officials. They show that of the 280,358,000 pesetas paid annually to a staff of 75,972 persons, 0.714 per cent. is paid to individuals receiving more than 12,000 pesetas—or about £320 at current rates of exchange—per annum, and 0.370 per cent. to those receiving more than 20,000, say, £530. The number of persons in each class is 167 and 53 respectively. The Minister of Public Works, in the Cortes, has himself exposed the absurdity of a charge, still brought forward after many refutations.

* * * *

The Enginemen and the Whistle

An application from the Brotherhood of Locomotive Enginemen and Firemen for an order requiring all railways under Dominion legislation to place locomotive whistles where their sounds will not injure the locomotivemen's ears was heard by the Canadian Board of Railway Commissioners on January 30. The representative of the union said he had received many complaints of the unpleasant effect produced by the blowing of whistles located close to the cab, and also of the dangerous conditions created by steam from the whistle obscuring the view. Firemen suffered most, because of the tendency to place the whistle on the left-hand side of the boiler. In reply, the board pointed out that changing the location of a whistle is expensive, as, when a new hole is put in a boiler shell, adequate reinforcement must be provided. The cost was computed at \$140 (£28) a locomotive, although on engines equipped with front end regulator valves the work could be done for about \$110 (£22). Locating the whistle on the dome would be difficult on account of clearance limitations. Judgment was reserved after the union's representative had made an energetic plea for an order that all locomotives in Canada equipped with front end throttle should have the whistle placed on the smokebox by December 31, 1934, and that the same arrangement should be followed in all new locomotives to be built.

Rhodesia and Mashonaland Railways

THE separate reports for the year ended September 30, 1933, recently issued by Rhodesia Railways Limited and by the Mashonaland Railway Co. Ltd., the systems of which are operated by Rhodesia Railways Limited, reflect the greater activity in the base metal industry, and the recovery in general trade during the second half of the year under review. Gross revenue of the Rhodesia Railways showed an improvement of £114,417, or 7.96 per cent. on the previous year. In working expenditure (including provision for depreciation and renewals) there was a reduction of £31,113, and the surplus of gross revenue over working expenditure was accordingly greater by £145,530, or 181.8 per cent. After providing for debenture interest (and interest on deferred payments thereof) of £628,254 and other fixed charges there was a loss for the year of £244,471, compared with £421,898 in 1931-32. Operating figures of the Rhodesia Railways for the two years are compared in the accompanying table:—

| | 1932-33 | 1931-32 |
|-------------------------------|-----------|-----------|
| Miles open | 1,538 | 1,526 |
| Train-miles | 2,042,195 | 2,021,717 |
| Passengers | 375,815 | 426,475 |
| Tons, general goods | 452,471 | 428,321 |
| Tons, minerals | 665,122 | 617,807 |
| Operating ratio, per cent. .. | 85.5 | 94.4 |
| Passenger receipts | £206,541 | £213,625 |
| General goods receipts | 739,569 | 670,414 |
| Mineral receipts | 432,399 | 358,386 |
| Gross revenue | 1,551,388 | 1,436,971 |
| Working expenditure | 1,325,830 | 1,356,943 |
| Surplus | 225,558 | 80,028 |

Approximate working results for the first five months of the present year are:—Gross revenue £754,793, expenditure £530,559, and surplus £224,234. These represent, in comparison with the corresponding five months in 1932-33, increases of £222,815 in gross revenue, of £48,407 in working expenditure, and of £174,408 in the surplus.

Mashonaland Railway earnings benefited from the considerable improvement in the base metal industries of copper, zinc, and asbestos, and from better trade in the second half of the year. Gross revenue was £144,103 higher than in 1931-32, but this increase included payments of £128,271 from Northern Rhodesia copper mining companies under guarantees in respect of branch lines to their mines. As the result of the programme of economies working expenditure during the year under review was reduced by £156,937, or 16.7 per cent. Operating figures are compared in the accompanying table:—

| | 1932-33 | 1931-32 |
|-------------------------------|-----------|-----------|
| Miles open | 912 | 912 |
| Train-miles | 1,042,012 | 1,156,795 |
| Passengers | 226,006 | 267,970 |
| Tons, general goods | 397,874 | 408,053 |
| Tons, minerals | 442,007 | 460,436 |
| Operating ratio, per cent. .. | 82.1 | 110.04 |
| Passenger receipts | £61,250 | £75,239 |
| General goods receipts | 333,871 | 321,579 |
| Mineral receipts | 376,820 | 334,044 |
| Gross revenue | 953,934 | 809,831 |
| Expenditure | 782,842 | 939,779 |
| Surplus + or Deficit — | +171,092 | —129,948 |

After providing for debenture interest (and interest on deferred payments thereof) of £469,504 and other fixed charges there was a loss for the year ended September 30, 1933, of £308,957, as compared with a loss of £526,225 in the previous year. It is reported by both companies that a conference will be held in Cape Town towards the end of May to consider proposals submitted to the Governments of Southern Rhodesia, Northern Rhodesia and the

Bechuanaland Protectorate for an amendment of the existing railway legislation so as to provide for the replenishment and maintenance on a more equitable basis of the statutory reserve account.

* * * *

Indian Railways Report for 1932-33

THE report by the Railway Board upon Indian Railways for the half-year ended March 31, 1933, is published as usual in two volumes, Volume 1 dealing with a general review of the year, including finance, new works, rolling stock, staff and miscellaneous matters. It contains a good general map of the railways of India, Burma and Ceylon, the systems being distinguished by colours, and also good local insets of Agra, Bombay, Calcutta, Cawnpore Junction, Coalfields, Delhi, Madras, Rangoon, and part of the B.B. & C.I. system. There are as well some excellent illustrations of new bridges, and various operating diagrams. Volume 2 is mainly statistical. The monsoon of 1932 was fairly normal and well distributed, and, from the agricultural aspect, the season was favourable on the whole and crops fairly good. Indian trade continued, however, to be depressed and this was reflected in a further decrease in the gross earnings of State-owned railways, which fell from Rs. 86 crores in 1931-32 to Rs. 84 crores in 1932-33, the net loss from the working of these railways being over 10 crores. The decline in earnings was mainly due to the fall in goods traffic. The more important decreases in the movement of goods traffic were in the export of jute, cotton, food grains and oil seeds. A further 306 miles were opened during the year under review, of which 154 belong to the State. Owing to the closing down of the Nokkundi-Zahidan and Landi Kotal-Landi Khana sections of the North Western Railway and dismantlement of certain sections of the Bengal & North Western, Eastern Bengal and North Western Railways and also to re-alignment, the net addition to the mileage of railways during the year was 148. In addition, 37 miles were under construction on March 31, 1933. The Calcutta Chord Line was opened in March, 1933, for mineral traffic but not for use by passenger trains, and work on the Dohad workshops, B.B. & C.I.R., was completed during the year, as was also the Rup Narain bridge.

To ascertain whether further economies were possible on Indian Railways, the Government of India obtained the services of Mr. F. A. Pope, General Executive Assistant to the President of the London Midland & Scottish Railway. Mr. Pope had been closely in touch with the various processes of rationalisation put into practice in recent years on that railway. In view of the shortness of his visit Mr. Pope concentrated his attention on the Great Indian Peninsula Railway and inaugurated a detailed analysis of every important activity of railway operation—"job analysis"—on that line. With him were associated five Indian railway officers, who worked with him during January and part of February, 1933. Their report was presented to the Railway Board on February 25, 1933, and was summarised and discussed editorially in THE RAILWAY GAZETTE of May 19, 1933. In a letter forwarding his report, Mr. Pope pointed out that already a large number of economies had been effected on Indian railways and there were no big individual economies left except the better use of locomotive power, and possibly a further amalgamation of railways. He urged, however, that considerable savings would be found possible if a detailed analysis of every operation conducted on a railway (job analysis) were undertaken and for this purpose constant organised research and investigation were necessary. At the end of the official year the position was that "job analysis" had been started on the North

Western, East Indian, Great Indian Peninsula, Eastern Bengal and Bengal-Nagpur Railways and its introduction on other lines was under contemplation.

The comparative figures in the accompanying table relate to all Indian railways:—

| | 1932-33 | 1931-32 |
|---------------------------------|----------------|----------------|
| Route-miles open | 42,961 | 42,813 |
| Passengers | 501,895,200 | 505,836,400 |
| Tons of goods | 70,601,000 | 74,575,000 |
| Net ton-miles | 17,202,541,000 | 18,346,765,000 |
| Average haul miles | 243.7 | 246.0 |
| Operating ratio per cent. | 71.61 | 71.08 |
| Passenger receipts Rs. | 31,34,35,000 | 31,35,44,000 |
| Goods receipts | 56,88,85,000 | 58,72,51,000 |
| Total receipts | 96,20,56,000 | 97,20,56,000 |
| Working expenses | 68,89,62,000 | 69,09,11,000 |
| Net earnings | 27,30,94,000 | 28,11,45,000 |
| Percentage return on capital | 3.11 | 3.21 |

On State-owned railways gross receipts amounted to 84½ crores, or 2 crores less than in the previous year. Working expenses, including the usual appropriation for depreciation, amounted to 61½ crores—about 1½ crores less than in the previous year. The net receipts of 23 crores, or 1 crore less than in 1931-32, were insufficient to meet interest charges. The deficit of 10 crores was, as in the previous year, borrowed from the accumulated balances of the depreciation fund. The only two important railways which showed any increase in receipts were the Bengal & North Western where there was a considerable increase in traffic due to the construction of new sugar mills and increased production therein, and the Great Indian Peninsula where the increase was mainly due to a better cotton crop. In net receipts the East Indian, Great Indian Peninsula and the South Indian Railways were better than in 1931-32, the Eastern Bengal and the Bombay, Baroda & Central India were about the same, whereas the Assam Bengal, Bengal-Nagpur, Burma, Madras & Southern Mahratta, and North Western were appreciably worse. During 1932-33 there were only two of the bigger systems that continued to work at a profit, viz., the B.B. & C.I., which showed a net gain of 41 lakhs, and the South Indian, which showed a net gain of 6 lakhs.

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The Part of Signalling in Fighting Competition

IN an address at the annual meeting of the Signal Section of the American Railway Association, Mr. J. O. Dunn, editor of our American contemporary, the *Railway Age*, drew attention to the importance of signalling as a weapon in the fight against the many forms of competition with which railways are now faced. Mr. Dunn placed the annual loss due to these competitors at over a thousand million dollars. The only way to improvement, he said, was to meet them on their own ground and duplicate and improve upon those features of their transport services which had proved so attractive to passengers and traders. An urgent requirement was speed, and already much had been done towards the acceleration of passenger and freight trains. This was a development in which signalling was destined to play a leading part. He continued: "Another improvement in railway service which is necessary if competition is to be met and overcome is an increase in the convenience and frequency of both passenger and freight service. Travellers and shippers want to get themselves or their products to destination in a hurry. Railway competitors are meeting this demand, and the railways, if they want the business at stake, must likewise meet it. With these considerations in mind, the problem faced by signalling officers of the railways is that of providing the means by which more trains and faster trains can be

operated smoothly and safely and with a minimum of new capital expenditures.

New types of motive power capable of hauling longer trains at higher speeds have contributed to the faster schedules, but an important factor in recent years has been that, owing to reduced traffic, there has been a minimum of interference between trains. As the number of trains increases delays will tend to increase in an even greater proportion, and there will be a demand for increased track capacity. Formerly this problem was solved by adding tracks, but now we have this new facility known as centralised traffic control, which will not only increase the capacity of single-track line materially, but is also being used on multiple-track lines to direct train movements in either direction on all tracks, so as to use two or more tracks in one direction during the periods when the preponderance of traffic is in one direction or the other. In many cases the existing signalling facilities probably will have to be revised to meet the new requirements resulting from the acceleration of passenger and freight trains. Exactly how the many problems can be solved you and other railway officers will have to determine. The important thing is that greater speed and greater convenience are essential to the future prosperity of the railways, and it is largely up to the signalling officers to show how these needs can be met with economy and safety. I should like to emphasise particularly that the safety of railway transportation must be preserved. In some places there are doubts whether the railways can pursue vigorous programmes of accelerated train service without increasing the likelihood of accidents. In my opinion, however, the proven merits of existing facilities, and the ingenuity of railway signalling officers, afford a basis for confidence that the railways will continue to be very much the safest means of transportation in this country.

"As railway business improves, and as efforts are being made to meet the new requirements of modern railway transportation, an opportunity is offered for signal department officers to be of greater service to their respective railroads than ever before. Signal engineers should be well informed on matters concerning train operation as well as signalling. They should study operating conditions on the various sections of their railways. They should remember that the best way to increase average speed is by elimination of delays. It is more than likely that co-operation between signalling and operating officers will result in plans for signalling arrangements whereby causes for delay, long accepted as inevitable, may be completely eliminated. I am constantly more strongly impressed with the importance of proper signalling facilities in the solution of many of the problems which the railways now face. The fact is that signalling is one of the keys which will open the door to the better transportation which is ahead of us. As signal department officers of the railways, you have a great responsibility and a great opportunity."

SOUTHERN RAILWAY VISITS TO FAMOUS CATHEDRALS AND ABBEYS.—On Sunday, April 22, the Southern Railway will inaugurate with special corridor observation trains a series of rail tours to famous cathedral cities, abbeys, and other centres of historical interest. The first trip will be to the ancient Cinque Port of Sandwich. The train is booked to leave Charing Cross at 10.35 a.m. and to arrive at Sandwich at 1.35 p.m. Speed will be reduced at various points to enable passengers to view the scenery. Guides will be in attendance to point out places of interest throughout the journey and to conduct parties round the cathedrals, &c., which are the objectives of the tours. A printed itinerary will also be handed to each passenger. A refreshment service will be provided.

LETTERS TO THE EDITOR

The Editor does not hold himself responsible for opinions expressed by correspondents

Safe Speeds and Axle Loads on Colonial Narrow Gauge Railways

Hants.

April 12

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Mr. Bulkeley's interesting letter raises points which must have given many traffic officers food for thought. No doubt when some of the Colonial narrow gauge railways were constructed, insufficient attention was given to the question of speed. It is comparatively only a few years ago that road motor traffic was in its infancy and now that there is serious competition in many parts of the world, this lack of foresight is causing loss of traffic. Limitations of speed may be of no great moment on short branch lines, but on main lines, or where the formation of the country and the prospects of future traffic make it possible that branch lines may be extended, and may even form main trunk routes, speed limitation assumes a serious aspect. This limitation is due firstly to the layout of the railway, secondly, to the permanent way and, thirdly, to the locomotives and other vehicles which the permanent way has to carry.

So far as the layout of the railway is concerned, this is a matter which it may not be possible to correct without an inordinate expenditure of money. Trains creep along the hill sides in difficult country, curves are long and very sharp, and gradients are heavy. While it may be possible to carry out a certain amount of local re-alignment, including the insertion of transitions, re-alignment of any magnitude must be a matter for serious consideration.

Turning to the permanent way, rails can gradually be replaced with a heavier section; or, if axle loads are light, additional sleepers can be put in each rail length until the approaching demand for heavier rolling stock justifies heavier rails. Bridges and culverts may not be strong enough to carry heavier or faster traffic, and may need strengthening, or even complete renewal. A further source of trouble is ballast, which is frequently not as good as is desirable.

There is a point in connection with rolling stock to which Mr. Bulkeley draws attention. On most narrow-gauge railways not only is the cross section of the vehicles very large in proportion to the gauge of the track, but the centre of gravity is very high. It is, therefore, difficult to stop rolling once it starts, and consequently it is the more necessary to have a track as perfect as possible, without any low places or irregularities in alignment. On sharp curves, joints are frequently staggered, and unless careful attention is given to joints, particularly those in the high rail, dangerous rolling may be started. Moreover, a high centre of gravity seriously reduces the safe speed round curves. In this country vehicles which travel at high speed have a centre of gravity which is not more than about 1.25 times the gauge in height, but if this height is increased to twice the gauge, the safe speed round curves may be reduced by over 20 per cent., and by a much larger amount than this if the track is not in first class condition. This is a matter which might well receive more attention in future, though on many railways something has already been done by the introduction of Garratt type locomotives. It may not be easy to deal successfully with other vehicles, particularly on track of 2 ft. 0 in. gauge, though possibly the provision of longer bogie vehicles might help to solve the problem. Another point worthy of consideration is that on curves where the cant is considerable a high centre of gravity is thrown over more towards the low rail, so that with excessive cant a stationary vehicle might become unstable in a gale of wind.

All things considered, however, it is probable that average speed is influenced more by the layout of the railway than by anything else, assuming, of course, that the track and vehicles are reasonably well designed and maintained. It may fairly be said that the speed at which trains can travel on any existing railway is determined to a great extent before the first sod is cut, and depends upon the amount of

money the promoters are able to command, and this in turn may be dependent upon the volume of traffic which may be reasonably expected and the rates and fares which can reasonably be charged. Can it be said, therefore, that a cheaply constructed railway, serving difficult country, and over which only low speeds are possible, is not realising full value for capital expended? Can it not equally well be said that had money been available to construct a railway suitable for high speeds over the gauge in question, it would have been impossible to work the railway at a profit?

A joint report such as Mr. Bulkeley suggests would, no doubt, be of very real benefit, and might go a long way towards the solution of a world wide problem.

Yours faithfully,

P. H. JACKSON

The table which was included in Mr. Bulkeley's letter published last week unfortunately contained an error in the headings of the second and fourth columns. We therefore reproduce the table again with the correct headings:—

| Gauge | Normal speeds (Based on standard gauge = 56½ m.p.h.) | | Maximum speeds (Based on standard gauge = 80 m.p.h.) | |
|---------------------|--|-----------------|--|-----------------|
| | $va \sqrt{G}$ m.p.h. | vaG m.p.h. | $va \sqrt{G}$ m.p.h. | vaG m.p.h. |
| 5 ft. 6 in. | 61 | 66 | 86½ | 93½ |
| Standard | 56½ | 56½ | 80 | 80 |
| 3 ft. 6 in. | 48½ | 42 | 69 | 59½ |
| 2 ft. 0 in. | 37 | 24 | 52 | 34 |
| 1 ft. 3 in. | 29 | 15 | 41 | 21½ |

It may be explained here that *va* in this table means *varies as*.—Ed. R.G.

The Signal Engineer's Department

Broadway, Westminster, S.W.1.

April 10

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—All your correspondents have missed the one important factor which allows of a high degree of safety, namely, good running and economic signalling without which Signal Engineers on railways could do little towards making travel safe and economic.

The manufacturer of signalling apparatus is the backbone of all railway signalling, as without efficient apparatus the railway signal departments would cease to maintain such a high standard. All credit is due to the manufacturer of signalling apparatus, which, when installed on railways, works efficiently providing it is maintained with the care that is necessary. Signalling schemes, installations, &c., are carried out in full by the signal manufacturer, whose engineers are well trained and fully experienced with regard to signalling and railway work besides being thorough electrical and mechanical engineers.

The railway Signal Engineer is confronted with problems which, when placed in the hands of the manufacturer, are soon turned into workable schemes and installations using well tried foolproof apparatus. Thus the Signal Engineer on the railway can rely on his signalling system working efficiently. The manufacturer of signalling designs his apparatus to work in with all railway conditions in all local circumstances. In the past, few have recognised or appreciated the work of the signal manufacturer. It is he really who is the Signal Engineer. Even the Institution of Railway Signal Engineers has at last shown its appreciation by electing as President a signal manufacturing engineer. Manufacturers of signalling make a claim to quality and efficiency on which is staked their reputation. It follows, therefore, that they not only set but are bound to maintain a standard which is high. They ever perfect signalling schemes, new installations, new developments and equip railways with efficient signalling.

Yours faithfully,

"SIGNALLING MANUFACTURER"

THE SCRAP HEAP

The Serious and Humorous Sides of a Railway Superintendent's Official Life*

I am not intending to dwell at length upon the serious side of a railway superintendent's official life, though we have all had plenty of it. Reviewing one's career one can now, as a retired officer, look back upon the anxieties and difficulties experienced far more complacently than it was possible to do at the time they happened.

My father was a civil engineer on the old London & North Western Railway, so that from my earliest days I lived in a railway atmosphere. He had for his official use an inspection engine and small four wheeled coach. The engine was naturally most interesting to me: it was an old L. & N.W. passenger engine of very pleasing appearance, with driving wheels I think of 4 ft. 6 in. diameter. He took me with him frequently when on school holidays, but although on some days during term having heard he was going a local tour I did not feel well enough to go to school, he did not invite me. I know now he knew more about boys than I thought he did.

Looking back, one of the most serious predicaments concerning myself and the railway arose whilst I was still a boy. A few pals and myself about the same age having purchased a small bull's eye lantern with green and red lenses decided it would be interesting to see what would happen if I showed a green light when the night mail was in the station—which I did. The train started, leaving most of the mail bags behind, the guard jumped into the van and applied the van brake and the train was stopped. Porters and others staggered along the permanent way with the bags and the train once again started.

Then my troubles began. The old stationmaster, with a long silvery beard, having traced the culprit and decided apparently to deal and settle the case summarily, took the individual into his small office and told him exactly what he thought of him. I can still picture in my mind his long beard wagging now—pointing out the seriousness of the offence, and threatening to tell my father. The guard, another fine old character, also informed me in very understandable language *his* views next time he saw me.

This so far as my *feelings* were concerned was certainly one of the most serious experiences of my life affecting railways and myself, and I was thankful when the weeks passed by and I heard no more of the matter.

After working for some years in the South, I was suddenly transferred to

Wigan as an Assistant District Superintendent, and although I was under the impression I have a fair knowledge of the King's English, I found my grammar and vocabulary was of a very different type from that used up there. One remark of a District Inspector of the old school amused me very much. He was about to retire, and I mentioned the question as to who his successor should be. He turned to me and said by way of recommendation: "There ain't many as can learn Tom much." Tom, being his assistant, was later on appointed to the position, and a real good inspector he was.

I suppose those of us who have been Superintendents and traffic officers of operation—as they are now called, will agree that accidents major and minor, also irregularities, were a really serious part of our official lives.

It was my hard luck to be officially at the scene of the Weedon, Charfield and Aschurch accidents. Representatives of the press were the most difficult to control. Charfield was the first accident in my experience when a press representative arrived by aeroplane before the railway officers' special got there! He was busy when I arrived getting garbled yarns from guards, porters and anyone who was foolish enough to talk. At Charfield, fire after the accident was a serious feature, and that in addition to the unfortunate individuals who lost their lives, and who were definitely traced, there were clear indications that two children were also killed and their bodies destroyed by fire, but although they were said to have been seen in the train at Gloucester the last stop prior to the accident, they were, so far as I know, never traced nor any enquiry received about them—this was certainly very strange.

Having to control and deal with large numbers of men, especially during later years, was also one of the serious problems of a railway officer, and in order to maintain his position, and enjoy the confidence and loyalty of his staff, one had to try and have no favourites, and always be scrupulously fair. I recall one interesting experience showing how small the world is, and also the sporting spirit of the men, even though as an officer one had at times reluctantly to deal with them.

Some years ago I was travelling on a Sunday on the Underground and wishing to enquire as to certain trains I asked a man in uniform on the platform to direct me. He replied "First on left, Mr. Bradford." I was fairly staggered, and said "How do you know me?" He replied "I know you all right, you sacked me from the London & North Western five years ago!"

I told him that I always tried to forget unpleasant things like that, but that if I did dismiss him he jolly well

knew himself he deserved the punishment. I then inquired what he had done. He replied "I was one of the five caught pinching the milk in the early morning at X. I was a fool and threw my job away." We had quite a pleasant talk and he certainly bore me no ill will.

Bad language was, of course, a thing no officer could ever condone. A case was reported to me by a young goods guard where it was stated the driver, a man of long experience—who appeared to be very dissatisfied with the way the guard was shunting wagons in and out of a group of sidings—asked the youthful guard, who was not too well versed in the allocations of the sidings, or destinations of the wagons, what he was playing at, and the report stated, he added, "You are acting like a bloody fool!"

I communicated with the Locomotive Superintendent, who, in due course, sent me along the driver's explanation, which read:—

"With respect to the statement that I called goods guard Brown a bloody fool at — station goods yard on such a date—I regret to say *this is correct!*"

As a District Superintendent, one recalls with pleasure the assistance and ready help received during one's career from brother officers, Goods Managers, Engineers, Civil, Mechanical, Signal and others. I will relate one or two incidents which were at any rate interesting and amusing to me. My old friend sitting here on my right, who is now the respected Honorary Secretary of this Society, looks the picture of geniality. I can assure you, gentlemen, he could send out some flaming telegrams. I got into his bad books occasionally in a most simple and innocent way just prior to a Bank Holiday, and on other occasions I was a party to passenger coaches required for excursion and relief trains being stabled on what he considered—quite rightly—were Goods dept. Sidings—I am sorry to have to add that our friend Fred Ruffell, who is also in this room, and who was at that time the Rolling Stock Superintendent, was fully aware of and approved of these arrangements.

Then the Civil Engineers were very difficult chaps to get something for nothing out of, and when wagon engines or wagons had been derailed the permanent way was always in order and to gauge before the mishap, but was damaged thereby. Only in one case my friend Major Newton Ford and I received a letter saying:

"The permanent way was out of gauge, which was the cause of the derailment."

We treasured this letter for many years and always in our minds. In later years, when asking for small alterations or work to be carried out, I adopted the phrase that "no doubt the material recovered would more than

* Extracts from an address by Mr. J. G. F. Bradford (formerly Passenger Superintendent, Birmingham L.M.S.R.) to the Retired Railway Officers' Society.

pay for the small cost of the work." The engineers took not a bit of notice of this and simply replied: "To carry out the work mentioned will cost so and so."

Very important, of course, primarily from the point of view of safety and to follow up any bad loading, &c., is the question of "goods found on line." I have in my hand a statement forwarded to me and signed by Arthur Turnbull, of Crewe:—

| Description of Goods | Where Found | Taken to |
|------------------------|---|------------------|
| Top set of false teeth | South Leicestershire line near Nuneaton | Nuneaton station |

This reminds me of a pathetic letter I received at Euston during the War from a sergeant-major on war service somewhere in France. Trains conveying troops travelling from East to South were worked over the North London line and so to the Southern Railway to avoid the troops having to cross London. As many of you know, approaching Willesden the North London passes close to rows of houses on either side. The women folk were in the habit of keeping a look out for the troop trains, waving and shouting good wishes to the soldiers, and the sergeant-major informed us that, responding to the hurrahs too heartily, his top and bottom set of teeth dropped out, and he was in sad trouble. I communicated with my friend the Engineer, Woodhill, the teeth were found and forwarded to France, and in due course I had a grateful letter of thanks from the owner.

It has been truly stated that truth is stranger than fiction: On one occasion a night express with two engines on was reported to have passed signals at danger. The signalman concerned duly forwarded the train running away signal; but the section ahead being cleared at the same moment the signalman at the box in advance pulled all signals off and allowed the train to run. Consequently the drivers' attention was not drawn to the matter until the reports came through afterwards. They denied passing the signals.

There was an automatic fog signal working with the starting signal which it was reported had been exploded.

A joint enquiry was held, the four enginemens stated the signals were off and no fog signal was exploded.

The signalman had done everything in order, and I refused to blame him. In the face of four locomotive men against him we were at a complete deadlock and decided to adjourn to lunch. No better result after so we decided to adjourn the enquiry.

A few days later happening to visit an adjacent signal-box upon another matter, the signalman said to me "Funny, Sir, wasn't it, about Fogman Robinson being called last week by his wife for fog duties when there was none." I pricked up my ears and found it was the explosion of the automatic fog

signal by the train in question his wife had heard and gave her husband a dig in the ribs and told him to get up as there was a fog. He did so, but finding on looking out it was a beautiful clear night he returned to bed. Not knowing anything of the irregularity the latter incident was not reported but only talked of amongst the plate-layers. Result. Enquiry reopened with District Engineer and the fogman present and enginemens found at fault.

Different folk have different views as to what is real humour. On the day electric trains first ran on the Watford line, one of our young assistants informed me the electric train men had sent a small coffin to the loco. shed at Willesden with an inscription upon it

To the memory
of
the steam service
which died

Personally I thought it such an outrageous sense of humour I sent my assistant to Willesden and told him to bring the coffin in to me. This he did, but when I got it I didn't know what to do with it and placed it in a cupboard of my desk, and it was years before I broke it up and burnt it.

I have, like most of you gentlemen, received some funny letters from the public at times. A few years ago I received a letter from a large firm of fish and poultry dealers as follows:—

"We received 18 crates of poultry yesterday, and our Manager advises us that your carter dropped one from the truck and knocked them about badly, in the first place causing unnecessary suffering to *dead animals*, also a loss to us of £1, which we claim.

"We trust this will not occur again or we shall take the matter further."

In conclusion I might mention one or two amusing incidents which occurred when an Indian student who came over to study railway work, and was sent down to me in the Birmingham District with a letter of introduction from our General Manager. I could not meet him myself and deputed my chief clerk—a most benign looking individual with a dark beard—to do so. He met the train and at once spotted the Indian and spoke to him and said "Are you Mr. T." He said very sharply twice, "No!" Anyway he softened shortly and admitted he was, and that evening when I met him I enquired why he had denied his identity to my assistant. He said "I thought he was a bandit and that he had a revolver!" He told me when he got to know me that before leaving India he had been given very definite advice with respect to his conduct during his visit to England, which was:—

"Do not speak to strangers.
Do not take strong drink.
Do not fall in love with English girl."

I am able to state most definitely he did not altogether carry out the last order.

I will close my talk by quoting from a paragraph which appeared in THE RAILWAY GAZETTE a few years ago and with which I am quite sure all of us in this room agree:—

"Working upon a railway, no matter how we grouse at it at times, is really a most interesting occupation, embracing as it does that side of life which is made up of suddenly changing circumstances, giving tremendous scope and opportunity for the exercise of foresight, initiative and decision."

[Perhaps other retired officers will send us some of their reminiscences of humorous or unusual incidents in their railway careers.—Ed. R.G.]

Publications Received

Canadian Pacific Literature.—We have received a folder giving particulars of Canadian Pacific fares and sailings between Victoria and Vancouver and the Far East for the present year. Arrivals and departures of connecting liners at European ports are also shown. The publication includes time-tables of C.P.R. expresses to and from Vancouver, and a two-page map of the company's railway and steamship services. Current arrangements for world tours are summarised and the folder is illustrated with pictures of C.P.R. steamships, trains, and hotels. A second folder, "Tour Canada and U.S.A.," is to hand from the same source. This describes 21-day steamship and rail tours, with excursions, at inclusive rates and 12-day tours to Canada only by the *Empress of Britain*. New low fares are now in operation for both these facilities.

Superweld Tools and Die Steels.—Edgar Allen & Co. Ltd., Sheffield, sends an entirely new and attractively produced booklet dealing with the popular range of Stag Major Superweld tools. This replaces the small folder formerly issued and comprises 16 pages of illustrated text outlining the advantages of the implements, the results of destruction and breaking tests to which they have been submitted, and hints on grinding or sharpening. An account of the manufacture of the tools is reproduced from *The American Machinist*. Dimensions and diagrams of the standard range are appended. Headings and captions printed in blue add materially to the appearance of the pages. The same firm also submits an illustrated folder describing its entire range of die steels, with notes on the characteristics and uses of each grade. Both publications maintain the high standard of production and convenient reference which is a feature of Edgar Allen literature.

OVERSEAS RAILWAY AFFAIRS

(From our special correspondents)

Remunerative railway extension in New Zealand — Increased South African Railways revenue — Reduced Indian tariffs—Bill to increase Spanish rates—French railway reorganisation

NEW ZEALAND

A Successful New Line

The new direct rail connection with the north opened recently through the Taranaki District is exceeding expectations in the increased business it is securing. An indication of the popularity of this line is to be found in recent figures of bookings at New Plymouth, the chief station in the Taranaki District, where the passenger revenue in the first four months after the new line was opened, compared with the corresponding four months of the previous year, increased from £6,115 to £11,400. Goods traffic has also increased very appreciably, and the numbers of up and down express passengers using the new line have increased by 150 and 108 per cent.

Another line which was completed only a few years ago, and still shows considerable development in traffic, is the Bay of Plenty line in the north-east of the North Island Central District. This railway has its outlet at Auckland, and last month carried 130,000 sheep compared with 30,000 in the corresponding month of the previous year. Part of this improvement is due to better prices for meat and wool, but had the line not been in existence it is improbable that anything like the same number of sheep could have been reared profitably in the district.

Week-Ending by Rail

There have been very marked developments in the week-ending-by-rail habit in New Zealand, and a recent Sunday saw, perhaps, the climax of seasonal traffic of this nature. One organised picnic arranged at Auckland by the Returned Soldiers' Association, carried over 3,000 passengers in four special trains, with a total of 50 coaches, to a favourite picnic rendezvous at Swanson. The total number of passengers dealt with at Auckland including this special and other traffic on that Sunday approximated 7,000 in the northern area alone. In the Wellington District over 2,000 excursionists used the trains, and in the Canterbury District (South Island) one organised party of a thousand made a week-end trip of 300 miles to the West Coast and back. The very low rates charged for special excursions of this kind is a definite inducement to travellers to take advantage of New

Zealand's summer season, but never has patronage at week-ends been so marked as in recent months.

A New Type of Spark Arrester

In recent months remarkable progress has been made by the Railway Department in checking the sparks from engines, which were formerly the cause of many fires, and consequent damage to railway and private property, by the introduction of a new type of spark arrester. The principle on which this operates is simple, but the results obtained have proved it to be extremely efficient, and all engines passing through the workshops are being fitted with the new device. The arrester is placed in the smoke-box, where a system of louvres promotes a rotary action to the gases and pulverises the sparks as they are drawn into it, preventing them from escaping through the chimney. This development enables Waikato coal to be burnt throughout the summer without any danger of fires being caused by sparks. Prior to the introduction of these arresters it was necessary to burn large quantities of Newcastle and Westport coals during the dry months, as the Waikato coal produced more sparks with the resultant greater danger of fire.

Railways, Public, and Press

The Chairman of the Government Railways Board made a marked impression on the recent Press Conference at Hanmer (a favourite tourist resort in the South Island) when he showed the extent of the work done by the railways for the benefit of the public, how safe they were, and how the greatest financial improvements had been achieved through intensive advertising campaigns. Contact of this kind with the newspaper men of the Dominion undoubtedly tends to a clear understanding by the public of the value of the railways to them and the effect of public support on national finance. In the financial year which ended March 31, 1933, the railways carried 18,366,654 passengers by rail and 2,740,263 by road, a total of 21,106,917 passengers. They hauled 5,490,686 tons of goods and livestock, including 16,500 tons conveyed by the through booking system, and the average charge made for freight haulage was only 2.52 pence per ton-mile. For the current financial year to January 6,

1934, that is, with almost 3 months still to go, there have already been 13,828,247 passengers carried by rail and 2,100,512 by road, and the goods tonnage hauled amounts to 4,076,260 tons. This has been done on a present capitalisation of £51,480,949. The net earnings to January 6, 1934, amount to £660,658. This is actually £203,323 better than the position obtaining at the corresponding date last year. The remaining months of the financial year are usually among the best for passengers and freight. The railways employ over 14,000 staff, of whom thousands are married men with families, and their permanent employment is a valuable steadying influence in the economic life of New Zealand.

SOUTH AFRICA

Probable Railway Surplus

In moving the second reading of the Railway Part Appropriation Bill in the House of Assembly on March 12, Mr. Pirow, Minister of Railways, made a very encouraging statement on the position of railway finances. He forecast a railway surplus of about £1,000,000. While this is most satisfactory, it must not be overlooked that the railways are carrying a burden as the result of the lean years in the shape of a heavy accumulated deficit. After all allowances are taken into account, the railways will probably carry forward an accumulated deficit of about £2,500,000. The past year's working results reflect a gratifying increase in revenue well in advance of the proportional increase in expenditure.

Railway employees have been allowed to participate in these improved conditions, most of the 16 cuts of one sort or another having been restored. Local and cost-of-living allowances will not, however, be restored unless there is a rise in the cost of living, but it is hoped that full time working generally will soon be resumed and that the workshops will be fully employed in the near future. On a conservative estimate it is anticipated that the railways will spend an additional £1,500,000 on salaries and wages in the coming financial year, which exemplifies the extent to which workers have shared in the increased revenue.

Financial Position

The latest official figures reflecting the financial position of the Union railways, harbours and steamships are in respect of the period April 1 to December 31, 1933, and they reveal that, at the latter date, there was an accumulated deficit of £2,408,434 after taking into account contributions to Betterment, Pensions and Superannuation Funds amounting to £252,750 and the deficit of £3,692,000 at March 31, 1933. The railway earnings from transportation services only during the same period amounted to £17,742,629, an increase of close on 2½ millions compared with the corresponding nine months of the previous year.

Railway working expenditure totalled £12,548,509, an increase of £871,592.

At the end of February the administration's motor services were operating over more than 10,000 miles of roads. The latest working results are for the month of December, during which the vehicle mileage run was 463,992, revenue £43,348, expenditure £35,828, revenue per vehicle mile 22-4d., expenditure per vehicle mile 18-5d., tonnage of goods conveyed 30,658, cream 63,676 gallons and the number of passengers carried 180,204.

Grain Consigned to Union Ports for Export

For some time the Administration has had under consideration, in consultation with the commercial banks and the export grain trade interests, the question of the transfer of export grain and grain products, whilst still in the custody of the administration at Union ports awaiting shipment, from the original consignee to a bank or to another exporter. As a result of these deliberations it was decided, with effect from March 1, 1934, to introduce a system of working which is designed to facilitate and assist the export grain trade by vesting in the banks, &c., control over, and providing them with security in respect of, any consignments of export grain against the value of which they have made any loan or advance.

INDIA

A Notable Locomotive Performance

A driver in the service of the Eastern Bengal Railway has to his credit an achievement which, perhaps, constitutes a record in India. He worked one of the engines in his charge for 95,000 miles without any mechanical defect. The driver has recently retired after working for 32 years. For 23 years he has driven the Darjeeling Mail.

Reduction of Fares

The changes in the conditions governing the movement of passengers by rail, introduced by the advent of road motors, have been taken into calculation in the revised fares for the third class passengers brought into effect on the North Western Railway from December 1, 1933. In the new scale of fares the basis of charge is reduced by half a pie a mile for the first 50 miles and by a quarter of a pie a mile for distances from 51 to 300 miles. For distances above 300 miles there is an increase of half a pie a mile. The revised fares work out cheaper for journeys up to 460 miles and a little dearer for greater distances. The railway administration would lose about Rs. 45 lakhs in earnings if there were no increase in the number of passengers, but the result of the first eight weeks working with the new scale shows that the number of passengers increased by 6 per cent. while the earnings fell by 6 per cent.

Third class fares on the Great Indian Peninsula Railway will also be reduced from April 1. The Agent of the railway recently explained to a press representative that the administration had resolutely cut down expenses from the beginning of the period of depression. The personnel had been brought down from 123,000 to 84,000 men. Other economies had been effected and wastage eliminated. In his opinion the time was opportune to pass on to the majority of the travelling public, the third class passengers, some benefit of the retrenchment. If the reduction in the fares fails to stimulate traffic, the administration stands to lose Rs. 13 lakhs in a year.

SPAIN

Railways and the Proposed Revision of Rates

The joint office formed by the Northern of Spain and the Madrid, Saragossa & Alicante companies for purposes of publicity and propaganda has issued a leaflet in connection with the Bill now before Congress for a provisional increase in tariffs. The proposal to raise goods rates by 15 per cent. has given rise to many protests, and, strangely enough, is opposed most bitterly by the Socialist party, prompted by the National Union of Railwaymen, who will accept nothing short of wholesale nationalisation. The leaflet now published by the joint publicity bureau of the two principal companies makes a comparison of Spanish rates and fares with those prevailing in other European countries, converted in each case to Spanish currency; the table is as follows:—

| | Centimos per Passenger per Km. | Centimos per Ton per Km. |
|---------------------|--------------------------------|--------------------------|
| Germany ... | 8 | 12 |
| Denmark (State) ... | 7 | 13 |
| France : | | |
| Etat ... | 5 | 17 |
| Midi ... | 6 | 13½ |
| Nord ... | 5 | 10 |
| P.L.M. ... | 6 | 11 |
| Orleans ... | 5 | 12½ |
| Sweden (State) ... | 8 | 9 |
| Great Britain : | | |
| G.W. ... | 7 | 12½ |
| L.N.E. ... | 6 | 13 |
| L.M.S. ... | 6 | 13½ |
| Southern ... | 7 | 17 |
| Italy (State) ... | 12 | 13 |
| Sweden (State) ... | 8 | 9 |
| Spain : | | |
| Norte ... | 5 | 10½ |
| M.Z.A. ... | 5 | 11 |
| Switzerland ... | 12 | 28 |

The Railway Problem

The divergent views of the different parties in the sub-committee for "urgent remedies" of the Transport Commission, described in a recent number of THE RAILWAY GAZETTE, were duly handed to the Minister of Public Works, who, in his turn, submitted them to the Council of Ministers. The result of these deliberations has now been made public in the form of a Bill, dated March 13, providing for a temporary increase in railway rates and fares, in order to

meet the difficulties experienced by the railways, until such time as the final decision of the commission is arrived at, and until some formula can be evolved to deal with the problem as a whole. Briefly, the terms of the Bill are: That the Minister of Public Works be authorised to concede an increase of 15 per cent. on all special and ordinary rates in force on December 26, 1918. A separate account, audited by the State, is to be kept by all the companies of the earnings attributable to the increase, intended to cover the deficit on working and the debentures in circulation. Any excess is to be handed to the State to be held in the form of a deposit until the Cortes shall decide how it is to be used. The increase is to operate only until the Cortes defines the juridical position of the companies in relation with the State, which, according to the bill, is to be within a period of two months.

Criticisms of the Bill

As was to be expected, the presentation of this Bill has given rise to controversy. Industry complains that a 15 per cent. increase in tariffs would be fatal to commerce, and the railwaymen are disgruntled because the increase is to go to the debentures instead of towards an increase in wages and salaries. On the other hand, the companies object that the project, if approved, would rule out a very large number of special tariffs which have been introduced in recent years. Also, there are many companies that cannot increase their tariffs, owing to the severe road competition to which they are subject, and these ask that some sort of cash aid be provided. There is no doubt that the draft will suffer considerable amendment before it is finally approved by the Cortes.

Meanwhile, the Transport Commission continues its work, and has asked for, and obtained, an extension of the time limit, until the end of the present month. The "urgent remedies" section has completed its mission, and the sub-committee which was to study some form of co-ordination between rail and road is also understood to have presented its report to the Minister. It is to be hoped that at last the long promised solution to the railway problem will soon be reached.

AUSTRALIA

Improving Position on Commonwealth Railways

In connection with the re-appointment of Mr. G. A. Gahan—recorded in our personal columns—as Australian Commonwealth Railways Commissioner for a further five years, it is noteworthy that his administration has been eminently successful, and notwithstanding the financial depression, the finances of his railway services show an improvement over the 1929-30 period when earnings were so buoyant. Compared

with 1930 earnings for the year ended June 30, 1933, declined 23 per cent., but working expenses were reduced by 37 per cent. The loss in working for the 1933 period showed an improvement of 73 per cent. compared with 1930. The principal railways controlled by the Commonwealth Railways Commissioner are the Trans-Australian, from Port Augusta to Kalgoorlie, 1,051 miles; the Central Australia from Port Augusta to Alice Springs, 771 miles; and the North Australian from Darwin to Birdum, 316 miles.

FRANCE

Government Plan of Railway Reorganisation

A plan for the reorganisation of the railways forms part of the Governmental programme of economies intended to balance the budget. The plan aims at effecting a saving of two milliard francs, or about £16,000,000 at par. The Government has powers to wield the economy axe in the form of decrees coming into force immediately, though subject to the approval of Parliament in the course of the coming session. Cuts will be made in the salaries and pensions of railwaymen, and under the reorganisation scheme the numbers employed will be greatly reduced. One decree will modify the present system of pensions and another will deal with salaries, bringing them into line with the salaries paid in the Government services.

But the most important part of the new plan is the reorganisation proposed by M. Flandin, Minister of Public Works. This is still under discussion by the Cabinet. His scheme, according to preliminary indications, is radical in character. It aims at carrying into force at once by decree a complete transformation of the transport systems of the country, embodying many of the proposals that have long been the subject of discussions in the press and in Parliament.

Independent Working Agencies for Rail and Road Traffic

The scheme rests on the basis of a complete separation between rail and road transport. The railway services will be kept to the rail and automobile transport to the road. From the administrative point of view the two systems will be absolutely separate. Thus, the railways would no longer have the right to form automobile subsidiaries for road transport. The idea is that the combination of the two systems under one management rarely makes for efficient operation and there is a confusion of interests in which the rights of the public often suffer.

Rail and road transport interests are to be asked to come to an agreement in each district. Long-distance traffic is to be reserved for the railways, which are to give a fast service with no stops at small intermediate stations. The road transport will provide for the intermediate stations and for feeder

services to the railway. On the small branch lines, the traffic is to be restricted to goods transport by complete trains and to railcar services. The railways will be relieved of the burden of unprofitable branch lines and will be in a position to reduce the number of employees, the possible reduction being estimated at 60,000. It is anticipated that the motor transport interests will find compensation for the suppression of competition with the railways on long-distance routes in a more intensive operation of the short-distance and district services.

If the parties come to an agreement, the Minister of Public Works will ratify it. In cases where no understanding can be reached, the parties must go before a conciliation committee, composed of representatives of the main railways, the secondary lines, and the automobile interests. The Minister is to act as arbitrator. If the committee does not give satisfactory results, Governmental regulations will then be applied.

M. Flandin has already received delegations of railwaymen, with whom he discussed the proposed reorganisation. From the point of view of wages, the delegates indicated that they preferred the maintenance of the present situation and pointed out that economies might be made in payments to high officials, some of whom while drawing pensions also accepted posts on subsidiary lines. The railwaymen asked to be consulted in regard to the details of the proposed reorganisation.

Fourth Exhibition Train

The Minister of Commerce recently inaugurated a tour to be made by a fourth exhibition train. It will tour Central France for three months and its journeys will take it over the P.O.-Midi and Etat systems. The principal stopping points will be: Bourges, Montluçon, Moulins, Clermont-Ferrand, Limoges, Brive, Montauban, Agen, Périgueux, Angoulême, la Rochelle, Cholet, Tours, Poitiers, Blois, and Orleans.

BRAZIL

Viação Ferrea do Rio Grande do Sul

With regard to the tenders which had been called for by the above railway for the supply of 30,000 tons of rails, valued at 16,000 contos, two firms competed for the order, one of them being the German firm, the Stahl Union, and the other a Polish concern, represented in Brazil by Gokkes do Brasil Limitada, both of which suggested that the settlement of the account for the rails should be by means of the exportation of Rio Grande products (principally lard, rice and tobacco), in lieu of monetary payments. The tenders presented by the firms in question have been sent to a special examining committee nominated for the purpose, and their report will be submitted to the Federal Interventor

for his final decision. The order in itself constitutes one of the biggest of its kind ever made in the State of Rio Grande, and a particularly interesting feature is the proposal embodied in both tenders to substitute what is tantamount to "barter" for a normal cash-transaction.

Improvements in the Time-Table

The day and night services between Rio and Bello Horizonte have lately been quickened up by from 20 to 35 minutes, the Rio-bound day "rapido" now covering the 640 km. in 14½ hours, of which the 462 km., from Lafayette to Rio, is scheduled in 10 hr. 40 min., with 21 intermediate stops. The track is mostly single. The São Paulo-Rio "rapido" has also been accelerated, taking 11 hr. for the 499 km. with 24 intermediate stops, 331 km. being single track.

ARGENTINA

Argentina's Debt for the Development of her Resources by Assistance from Overseas

At the luncheon in honour of Mr. Follett Holt, K.B.E., which, as briefly mentioned on page 553 in THE RAILWAY GAZETTE of March 30, was given by the Buenos Aires British Chamber of Commerce on March 21, Sir Herbert Gibson, in welcoming the guest, regretted that they had had to wait so long to personally thank their representative in London for the magnificent work he had accomplished, particularly in connection with the British Empire Trade Fair of 1931, and the Roca convention, to which he referred in terms of satisfaction. He gave a plain hint to Argentina never to overlook the importance of the debt services of her foreign investments, nor forget how her resources had been developed by the assistance from overseas.

Railway Wages

In connection with the reductions in salaries and wages agreed to between the railways and the labour unions, a revision of the agreements is being demanded, both by the unions and several of the companies. The two labour organisations, La Fraternidad (enginemen) and the Union Ferroviaria, maintain that on several lines the traffic receipts have been showing considerable improvement, thereby calling for a revision of the agreements, whilst the B.A. & Pacific, Cordoba Central, Entre Rios, and Argentine North Eastern Railways, all claim that their financial position is worse than ever, making necessary further reductions in salaries. It is also stated that the Union Ferroviaria representatives are in disagreement with the Management of the Great Southern and Western Railways on account of men being transferred from one railway to the other, consequent upon the joint working arrangements recently put into force.

AUTOMATIC RECORDING OF VERTICAL TRACK DEFECTS

An effective means of recording track irregularities under normal traffic loading and conditions is provided by the Stone-Cardew track depression indicator

DUE to the ever-increasing demand for greater speeds, heavier axle loading and electrification, the standard of permanent way maintenance must be correspondingly high. Among other devices for keeping abreast of the times and facilitating adequate maintenance is the automatic track defect recorder, of which there are now several different types, some of them already described in these pages. One deserving of attention is the Stone-Cardew depression indicator, which records all vertical irregularities in track alignment that exceed predetermined limits.

The system of instruments comprising this recorder, Figs. 1 to 7, consists primarily of detectors a, Fig. 7, one on each side of the engine, mechanically connected,

a charge of liquid kalsomine on to the rail at the defective place from the tank d, containing the mixture under pressure. Situated above the pressure tank is a convenient

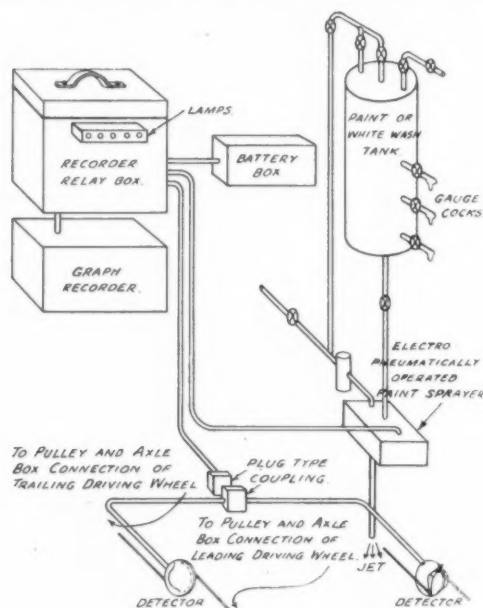


Fig. 1—Diagrammatic sketch of Stone-Cardew rail depression indicator installation

as shown in Figs. 2 to 6, to the axleboxes, and moving in response to wheel movements due to irregularities in the track. It can be set at will to operate only when those irregularities exceed any predetermined amount. The detectors are also capable of employing a minor and major setting at one and the same time, so that a distinction is made between depressions of a lesser and those of a more dangerous nature. These detectors control, by electric circuits, relays housed in a box b, Fig. 7, whose function is to show by means of light signals when a track defect has been encountered, the minor or major extent of the fault being indicated by the operation of the appropriate light. The relays also control the movements of pencils which record on a moving paper ribbon the location and extent of the depression, and a counter which keeps tally of the number registered throughout the test. Finally, the relays control the operation of a valve, the discharge jet of which can be seen at c, and which ejects

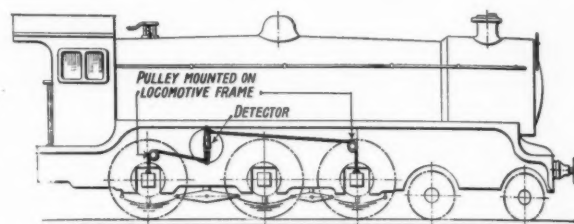


Fig. 2

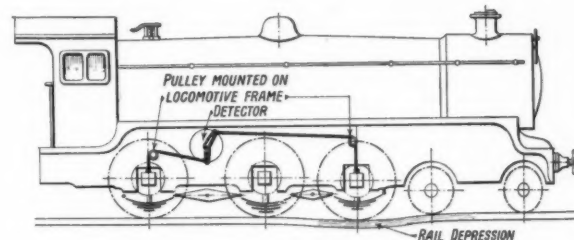


Fig. 3

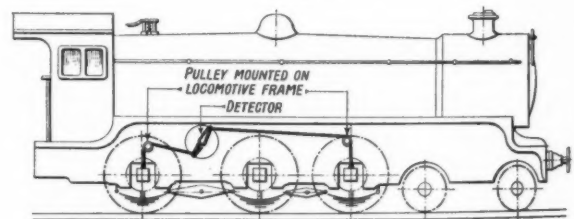


Fig. 4

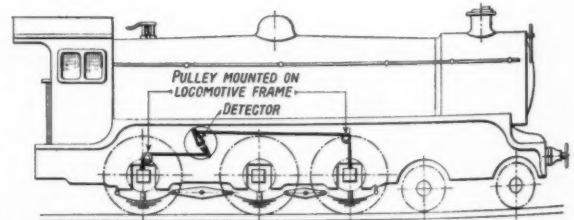


Fig. 5

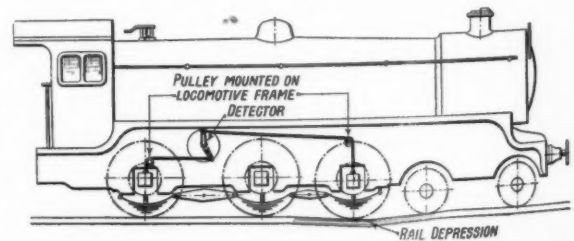


Fig. 6

Figs. 2 to 6—Diagrams showing working of detector



Fig. 7—Stone-Cardew depression indicator fitted to locomotive

form of charging vessel *e* by means of which the tank can be quickly recharged with marking mixture whilst the engine is travelling. A 12-volt storage battery which supplies the current required for the whole system is housed in a small cupboard behind the pressure tank, and marked *f*.

The track depression indicator depends for its action upon the functions performed by the detectors, photographs of which are reproduced in Fig. 8 (front view with cover removed) and Fig. 9 (back view). The main features of the detector are a disc *a*, Fig. 8, mounted on a spindle *b*, and having insulated contacts 1, 2, 3, 4 of different lengths, and a framework carrying brushes *i*, *ii*, *iii*, *iv*, which bear upon the disc contacts, the framework in turn being mounted upon a hollow spindle surrounding spindle *b*. This hollow spindle is attached to arm *A*, Fig. 9, whilst spindle *b* is attached to arm *B*, these arms being located behind the detector, and their movement being restrained by springs *C* and *D*.

The complete detector is mounted on the locomotive, in any convenient position, either on the frame, running board, bracket, or other fixed and rigid structure. One of the arms is then coupled by means of a flexible steel

wire passing round pulley wheels to, say, the leading coupled axle box, and the other to the trailing box, the wires being kept taut by the springs on the arms *A* and *B*.

Any of the coupled boxes are generally suitable, but it is usually most advantageous to employ two as remotely disposed from one another as possible. The detector must now be set to its zero position, which can be done by placing the locomotive on a perfectly even, rigid track (a good turntable is convenient), and adjusting by means of the screws (not shown in the figures), and scale provided on the disc. When set in this fashion each brush *i*, *ii*, *iii*, *iv*, Fig. 8, will be central on its contact 1, 2, 3, 4, and the arms *A*, *B*, Fig. 9, will be in line with one another, and perpendicular. The action of the detector can now be followed by reference to the diagrams, Figs. 2 to 6.

In Fig. 2 the detector is set to zero, and the engine is on a perfectly even track, and subject to no rolling or oscillation. Fig. 3 shows the engine again without oscillation, but with the leading wheel entering a depression in the track. The movement of one arm relative to the other should be noted. In Fig. 4 the engine is shown again on an even track, but with the frame and upper portion lurching or rolling away from the observer. No relative

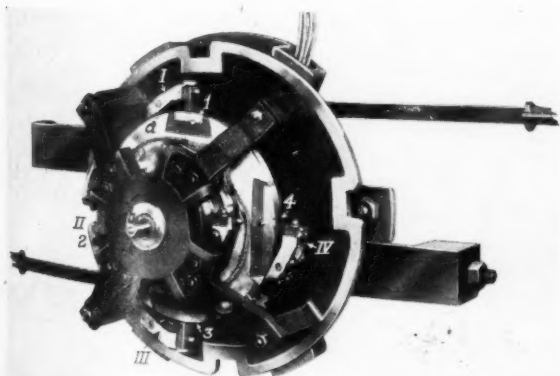


Fig. 8—Front view of detector with cover removed

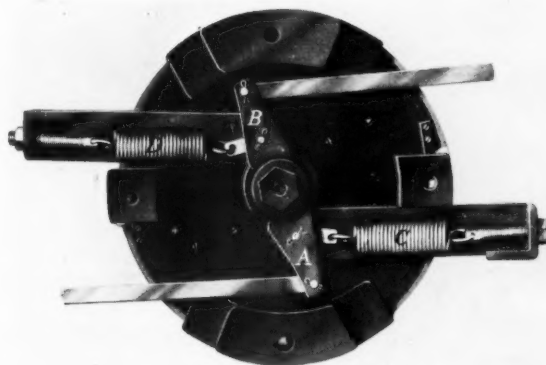


Fig. 9—Back view of detector

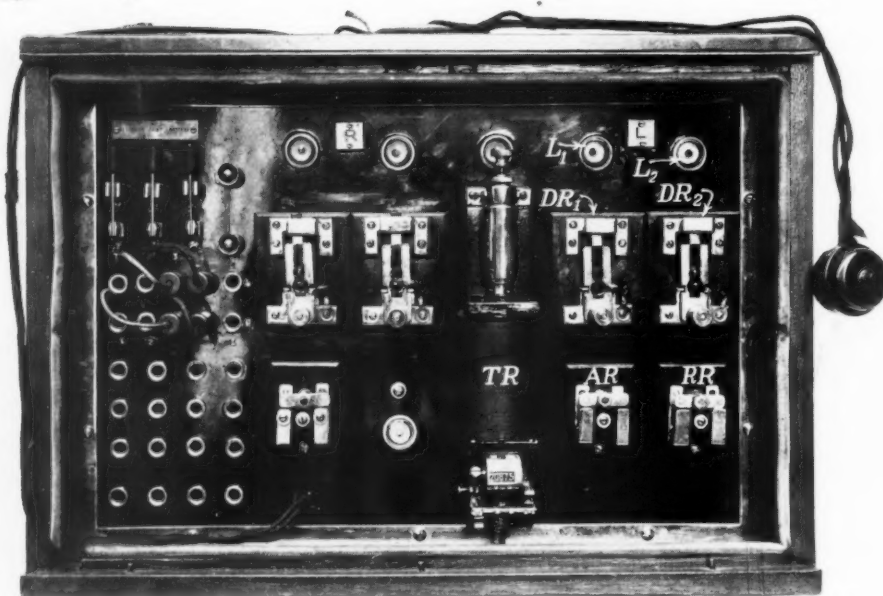


Fig. 10—Relay box

movement in the disposition of the arms occurs under these conditions. Fig. 5 shows the state of affairs with the engine rolling in the opposite sense, the arms changing the direction of their movements but again remaining without change of angle between one another. Fig. 6 shows the engine again with a rolling motion, but at the same time with the leading wheel entering a track depression, and it will be observed that, besides moving together due to the roll, the arms move relatively to one another.

In the manner described the mechanism eliminates the false results which would otherwise be produced by rolling of the superstructure, whilst still permitting it to detect uneven track. There remains the possibility of errors due to longitudinal pitching, but it is found that these are not serious, and furthermore, pitching itself is usually due to a series of vertical irregularities in the track.

It will be understood from the previous description of the detectors that so long as the arms do not move relatively, one to another, the disc and brushes do not do so either, but remain centrally disposed. The circuits are so arranged that, whilst the brushes are on the contacts, current is flowing, and all the relays in the relay box are held inoperative. As soon as relative movement takes place sufficiently to displace a brush from its contact, the relay concerned func-

tions. It will also be realised that the four different contact lengths shown provide for recording irregularities of various magnitudes, and, as already pointed out, any two may be selected for use at the same time, one serving to detect lesser and the other major depressions.

The purpose of the relay box is simply to record those detector movements which are in excess of the selected amount, in the form of light signals in the cab, location marks on the recording ribbon, and whitewash marks on the track. Fig. 10 illustrates the relay box. The relays operated by the sensitive circuit include an auxiliary relay, and a time relay to keep the signalling circuit closed for a sufficient period of

time. The signalling circuit operates an electric lamp, a graph recording unit, a counter and a valve for ejecting whitewash or paint from a tank to mark the defective portion of the track. The use of the relay system, including a time relay, ensures recording fault detections of very short time-durations, and moreover relieves the moving parts of the detector apparatus of the burden which mechanically operated (as contrasted with relay operated) indicating mechanism would throw on such moving parts. The sensitive circuit is normally closed, and when it is opened by movement of the contacts in the detector it operates a sensitive relay in its circuit. The operation of the sensitive relay energises the operating relays and circuits, one of

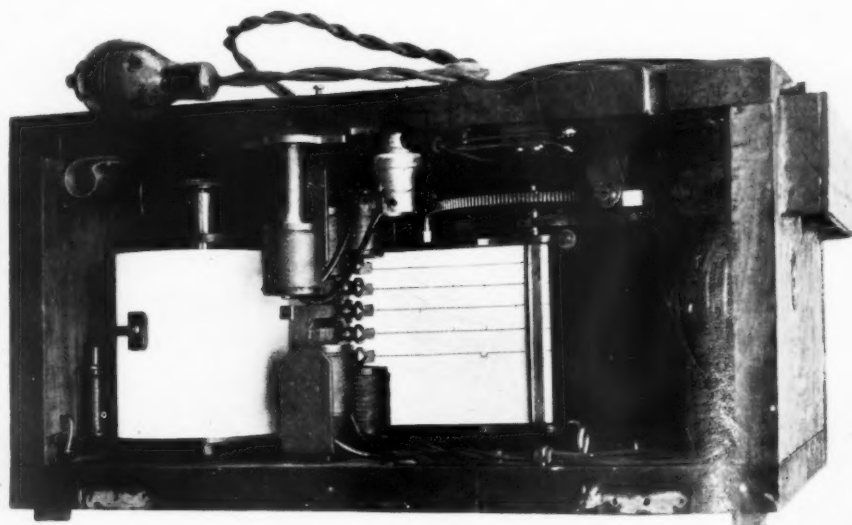


Fig. 11—Housing of recording ribbon

which re-energises the sensitive relay until the detector again operates. The operating relays and circuits are maintained energised by a locking circuit until a timing relay opens the locking circuit, or until the detector contacts have closed, whereupon the indicating mechanism returns to normal, with the sensitive circuit energised and the operating relays and circuits de-energised. As an

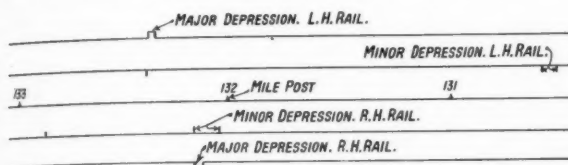


Fig. 12—Specimen record

illustration of the working of the system the following is the sequence of events when an indication of a track irregularity is received from the detectors. Normally, current is flowing from the battery to the wiring system on the engine, through the brush and contact segment of the detector, and back to the armature of one of the relays, say DR_1 in Fig. 10, through the relay, and thence to the battery.

When this circuit is interrupted by the movement of the detector brush off its contact, the relay DR_1 is de-energised, its armature is released, and in its new position switches current on to a light L_1 and to another relay AR. The movement of this second relay energises the time relay TR (whose speed of travel can be varied by means of an adjustable dash-pot device), and also operates the magnet of one of the pencils of the recording ribbon.

Whilst the time relay is in motion current is flowing to the electrically-operated paint spray valve, and, upon completion of its stroke, the time relay de-energises this valve and turns current on to a final relay RR whose action re-establishes a circuit through the detector (provided the brush has returned to its contact) and re-energises relay DR_1 . The movement of the latter's armature at once re-establishes the original normal flow of current as outlined in the first place, and all the other relays are de-energised, and ready for recording another depression. The introduction of the time relay ensures that when traversing a fault in the track at high speed a sufficient interval is allowed for the illumination of the lights and the lifting of the paint spray valve.

It is for similar reasons of speed that the whole system employs a normally closed circuit, for the breaking of this ensures quicker response of relay DR_1 than would the making of it, with the consequent risk of failing to respond to the detector at high speed. The events for the adjoining relay DR_2 , which is connected to the same detector, but to the larger segment, are similar, except that its armature, when released, besides lighting its light, L_2 , direct, also operates the appropriate pencil on the ribbon direct, and the relays AR and RR are not employed in the circuits. The resetting is done instead by a push button, the idea being that the operator may specially note the occurrence of these excessive, or dangerous, irregularities. As the relay AR is not operated by DR_2 , it follows that the time relay TR is not either, but as DR_1 is connected to the smaller segment, if a large irregularity brings DR_2 into action, DR_1 must operate immediately prior to it, so that through its medium the time relay discharges the necessary functions of operating the paint spray, &c.

The recording ribbon is separately housed, the assembly being shown in Fig. 11. It consists of serrated rollers, driving a paper ribbon, upon which bear ordinary lead

pencils. The rollers are driven by an arm with a ratchet engaging a toothed wheel, the wheel being mounted on one of the rollers. The arm is driven to and fro (the ratchet engaging and disengaging one tooth at a time) by an electro-magnet, which is energised and de-energised by a small rotating make-and-break device driven direct from the end of one of the tender axles.

It therefore follows that the travel of the ribbon is proportionate, on a reduced scale (about 3 in. a mile), to that of the engine. The pencils, of which there are five, draw straight lines until operated by one of the relays from the relay box, as already described, when they deflect laterally. Two pencils on one side correspond to the minor and major irregularities of one rail, and two on the other to those of the other rail. The centre pencil is hand operated by an electric push button, and serves to mark the location of mile posts, stations, or any other desired point. A specimen record as made on the ribbon is shown in Fig. 12.

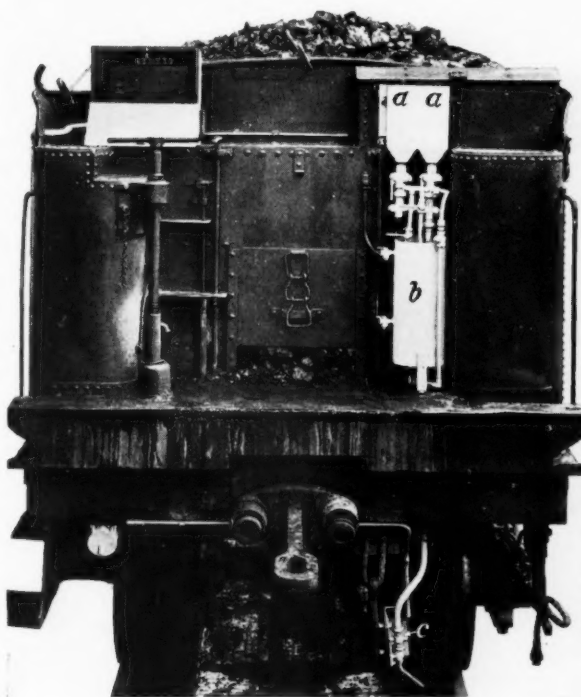


Fig. 13—Whitewash apparatus mounted on tender

The remainder of the equipment is very simple and requires little description. In Fig. 13 two fillers or charging hoppers a, a are shown on the tender, mounted above, and connected to the whitewash tank b. The latter contains the liquid under pressure, from any convenient source, e.g., the air brake. A pipe from this tank leads down to the discharge valve c, which is a plain electrically-operated type of valve, and discharges against the inside edge of the rail.

The location and details of all this part of the equipment can be varied to suit local conditions, but it is advisable to place the valve at the leading end of the tender as shown, for by doing this, as experience proves, the mark made on the rail more nearly coincides with the actual fault than if the valve be placed anywhere else. Even so, of course, as the speed of the locomotive varies there is a discrepancy, but under the most extreme circumstances this

does not amount to more than a few feet either way. For the sake of simplicity, only one valve is employed, marking the left-hand rail, so that it is necessary to make it plain to the permanent way staff that such marks indicate the presence of an irregularity in either the marked rail, or that opposite the mark, or in both.

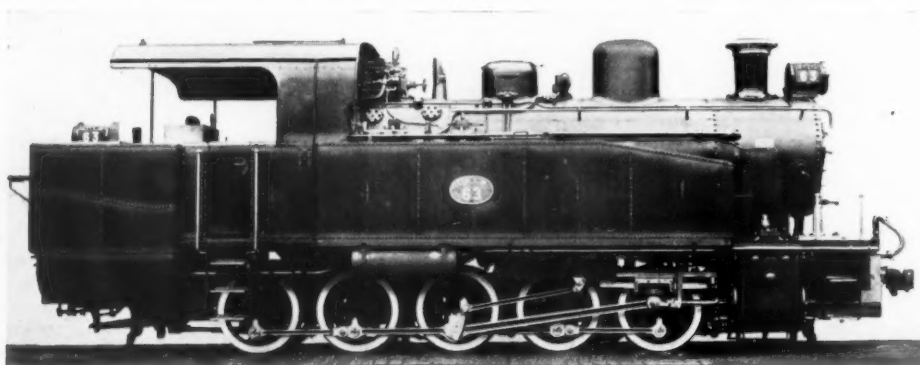
One or two other points worthy of note are that to facilitate removal from the locomotive, when the recorder is not required, plug connectors are provided for the recorder relay box and graph recorder. Also, to ensure easy and rapid connection or disconnection of the various electrical circuits between the locomotive and the tender, a nine-point plug and socket is provided.

From the foregoing description it will be obvious that detection and record of all abnormal vertical irregulari-

ties in the track are made along with an automatic register of the position of such defects and the extent of the seriousness of such defects is also indicated. The apparatus is of particular value for inspection in tunnels, operates effectively at any train speed and ensures greater comfort to the travelling public at a reasonable initial outlay and a negligible cost of maintenance. By enabling permanent way maintenance to be concentrated at the worst spots, a saving in labour charges should also be assured. The effects of the heaviest permissible axle loadings upon the track are registered, the lighter riding coaching stock thus being adequately covered in this respect. This useful instrument is manufactured by J. Stone & Co. Ltd., Deptford, London, England, to whom all inquiries should be made.

NEW 0-10-0 TANK LOCOMOTIVE FOR PORTUGUESE EAST AFRICA

THE accompanying illustration shows a 2-cylinder, saturated steam tank locomotive built by Henschel & Sohn A.G., Kassel, for shunting service on the 3 ft. 6 in. gauge Caminhos de Ferro Lourenço Marques. It is capable of negotiating curves of 80 metres (262 ft.)



radius, the rigid wheelbase being only half the total wheelbase of the engine. The overall dimensions of the locomotive, which has been built to the South African Railways loading gauge, are: Length, excluding draw and buffer gear, 9,400 mm. (30 ft. 10 in.); breadth, 3,000 mm. (9 ft. 10 in.), and height 3,800 mm. (12 ft. 5½ in.). Other leading dimensions are as follow:—

- Cylinders, diam. 480 mm. (18¾ in.).
- Cylinders, stroke 500 mm. (19½ in.).
- Coupled wheels, diam. 1,000 mm. (3 ft. 3¾ in.).
- Boiler working pressure 13 kg./sq. cm. (185 lb. per sq. in.).
- Boiler heating surface, water slide 100 sq. metres (1,076 sq. ft.).
- Grate area 1.6 sq. metres (17.2 sq. ft.).
- Wheelbase, rigid 2,400 mm. (7 ft. 10½ in.).
- Wheelbase, total engine 4,800 mm. (15 ft. 9 in.).
- Weight of engine in working order 56.3 metric tons (55 tons 8 cwt.).
- Water capacity 10 cu. metres (2,200 gallons).
- Fuel capacity 2½ metric tons (2 tons 9 cwt.).
- Max. theoretical tractive effort (0.8p) 11,000 kg. (24,200 lb.).

The materials used comply with the rules of the German State Railway.

The boiler construction follows usual practice. The firebox is of copper, with copper stays for the side, front and back plates, and steel crown stays, the front row of the latter being of the flexible type. The side plates of the outside firebox are cross stayed above the firebox crown plates; and flexible longitudinal stays are provided

between the outside firebox back plate and the smokebox tube plate. Seamless drawn steel tubes are used, and full provision is made for washing and cleaning the boiler. Seatings on the outside firebox, in front of the cab, carry the injector steam valves, the blower valve, and valves

for the whistle, vacuum brake, tube blower and pressure gauge connections. Two injectors are provided, one on each side of the firebox, each alone being capable of maintaining the boiler feed. Parry tube-cleaning equipment is installed, and a spark arrester is fitted in the smokebox. The shaking grate is provided with a special drop plate

at the back for the removal of clinker; and the air doors with spark guards at the front and back of the ash pan are adjustable from the cab. The regulator lever is placed at the right of the cab; and the cab equipment includes a Klinger water gauge with reflex glasses. The firedoor is of the sliding type.

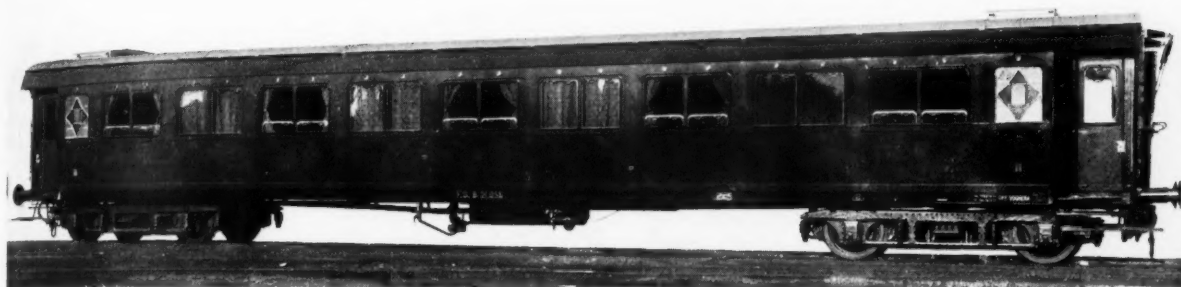
The frames are of the bar type, placed inside the wheels and well braced transversely and longitudinally. The smokebox saddle, cast with the cylinders, acts as cross stay at this point. The buffer beams carry automatic couplers. The bearing springs are all placed above the axle boxes and interconnected by compensating levers. Piston valves are used, and special attention has been paid to the provision of large steam passages and to the reduction of heat losses throughout. The valve gear is of the Walschaert type, controlled by servo-motor and hydraulic brake. A Detroit Type 32A lubricator is provided for the cylinders and piston valves.

In addition to the screw brake, and operating on the same rods, there is a Gresham & Craven vacuum brake with Dreadnought aspirator and two brake cylinders. Both brakes operate through cast iron blocks on all wheels, and brake pipe couplings are provided at both ends of the locomotive.

The auxiliary equipment includes a sand box on the boiler barrel with Lambert steam sanding gear; and a complete electric lighting installation, comprising a Henschel 32V turbo-generator, two searchlights, signal lamps, and lights for the water and pressure gauges.

NEW LIGHT-WEIGHT ITALIAN COACHES

Steel-framed vehicles incorporating aluminium wherever possible



A NEW type of passenger coach has recently been put into service on the Italian State Railways. In order to reduce weight, light metals have been employed wherever possible without impairing rigidity. Notwithstanding the greater weight of the bogies, the wheelbase of which was increased from 2·500 m. (8 ft. 2½ in.) to 3·000 m. (9 ft. 10 in.), it has been found possible to reduce the weight per seat—as can be seen from the following comparative table for the years 1921 and 1932:—

| | Weight | Number of seats | | | Weight per seat, kg. (lb.) | | |
|---------|--------------------------------|-----------------|-----|-----|----------------------------|----------------|----------------|
| | | 1st | 2nd | 3rd | 1st | 2nd | 3rd |
| 1921 .. | 42,800 kg. = 42 tons 2 cwt. | 42 | 64 | 80 | 1,018 (2,245) | 669 (1,475) | 535 (1,180) |
| 1932 .. | 42,800 kg. = 42 tons 2 cwt. | 48 | 72 | 88 | 889 (1,960) | 593 (1,308) | 485 (1,069) |

The principal dimensions of the new coaches are:—

| | |
|---|-------------------------|
| Length over buffers | 23·210 m. = 76 ft. |
| Distance, centre to centre of bogies .. | 16·170 m. = 53 ft. |
| Bogie wheelbase | 3·000 m. = 9 ft. 10 in. |
| Maximum external width | 2·928 m. = 9 ft. 7 in. |
| Internal width | 2·810 m. = 9 ft. 2½ in. |

The general characteristics of the frame and body do not differ much from the usual type. The sides are of ⅜-in. copper-bearing steel sheets. The roof is of aluminium in the centre and iron at the sides. The longitudinal partitions between corridor and compartments are fixed at the top over their whole length to a special V-shaped aluminium girder, which in its turn is firmly secured to the roof. At the bottom these partitions are fixed to plates projecting from the frame slightly. The partitions themselves are composed of aluminium sheets within a wooden framework. The cross partitions between the compartments



Second class compartment



Third class compartment

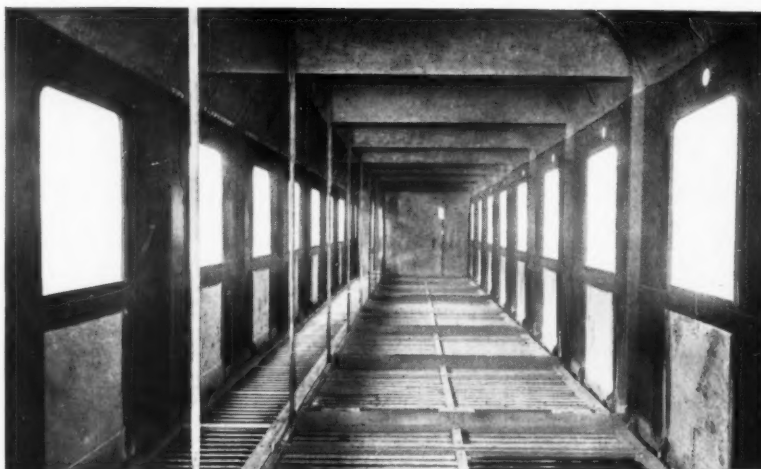


Walling, floor frame, and transverse roof ribs erected

are of aluminium sheets fixed at the bottom to the frame, and on their sides to the vertical pillars of the body and to the girder of the longitudinal partition respectively. The partitions of the lavatory are of steel. All wooden framework is of teak.

The internal decoration is very pleasing. In the first class carriages the visible woodwork is mahogany, in the second and third class teak, and, according to the class, velvet, or pegamoid or linoleum is used for lining the walls and partitions. The lavatories are white enamelled. The construction of the seats differs from the previous types, the framework being of aluminium and carrying special spring cushions which can easily be removed and cleaned.

The main floor is of corrugated aluminium covered with a layer of com-



Corrugated aluminium flooring in place



Wooden floor laid over compressed cork covering to aluminium flooring

pressed cork over which a wooden floor is laid, and this in turn is covered with carpet or linoleum according to the class. The compartments are fitted with the usual racks, &c., all metal parts in first and second class being of bronze, and each compartment is provided with two extractor ventilators.

The lavatory basins are fitted with a special anti-waste device which, when the tap is turned on, discharges only a measured quantity of water. The lavatory floors are composed of a grid of cast aluminium alloy which is fixed a certain distance above a lower floor of white enamelled aluminium alloy. This flooring has proved a great success, as no water can collect on the gridlike upper floor. The tanks have a capacity of 75 gallons of water.

The doors at each extremity of the

corridor are constructed in light metal. To ensure hermetic closing, a soft rubber packing is fitted in special grooves all round. All opening windows have metal frames and are equipped with the special balancing device of the State Railways. The heating radiators in the compartments are of aluminium. In order to avoid the harmful effects of expansion, the main steam pipe underneath the carriage is fixed to the frame in the centre, and is free at the ends. The carriages are illuminated, in the standard method used by the Italian State Railways, from eight accumulators, which provide sufficient current for about 38 hours.

Our first illustration depicts one of the second class coaches, but the third class are very similar in general appearance except that only single instead of double windows are provided for each compartment.

RAILWAY NEWS SECTION

PERSONAL

Mr. George Alfred Gahan, Australian Commonwealth Railways Commissioner, whose term of engagement expires in November next, has been re-appointed by the Commonwealth Government for a term of five years. *Vide* also page 666.

Mr. C. V. Bliss, C.I.E., who, as mentioned on page 624 in *THE RAILWAY GAZETTE* of November 3 last, is retiring from the position of General Secretary and Director of Wagon Interchange, Indian Railway Conference Association, took up his first



Mr. C. V. Bliss, C.I.E.

General Secretary, 1913-34, and Director of Wagon Interchange, 1927-34, Indian Railway Conference Association

appointment in India on the Bengal & North Western Railway in 1897. From then until 1913 he gained traffic experience on that line and on the associated Rohilkund & Kumaon Railway, latterly acting from time to time as Traffic Manager of the former. In 1913 his services were transferred to the Indian Railway Conference Association as Secretary. He was on war service in Mesopotamia 1917-19, first as Traffic Manager and later as Deputy Director, Railway Transport, and was mentioned in despatches and received the C.I.E. for his services. In 1927 the appointments of Secretary of the Association and Director of Wagon Interchange were combined, and since then Mr. Bliss has held the dual appointment. How onerous have been his duties will be obvious from our editorial on page 658. He has therefore been Secretary for 21 out of the 26 years during which there has been a permanent secretary, and his influ-

ence over the functioning of the Association has been correspondingly great. A period of 21 years in one office, in the course of 37 years' work, is something of a record for India. His successor is Mr. B. Lawrence, M.Inst.C.E., M.I.E.India, former Deputy Secretary.

At Maiden's Hotel, Delhi, on March 23, a farewell dinner was given by Sir Hugh Hannay, the President of the Indian Railway Conference Association, and by Agents of Class I Railways in honour of Mr. Bliss, who proceeded on leave preparatory to retirement on April 1. Sir Guthrie Russell, the Chief Commissioner of Railways, Mr. P. R. Rau, Financial Commissioner of Railways, Mr. C. P. Colvin, Member of the Railway Board, and Mr. J. M. D. Wrench, Chief Controller of Standardisation, also were guests at the dinner. Mr. Bliss's health was proposed by Sir Hugh Hannay, in terms admirably suited to the occasion. Mr. Bliss, responding, briefly expressed his thanks in a humorous speech.

A memorial service for Sir Frederick Palmer was held on Friday, April 13, at Westminster Abbey. The officiating clergy were the Dean of Westminster, the Rev. Dr. Percy Dearmer, the Rev. Dr. Jocelyn Perkins, and the Rev. Cyril Armitage. In addition to the family mourners there were present:—

Lord Ashfield; Mr. R. D. T. Alexander; Mr. H. T. Bailey; Mr. C. H. Barfoot (representing Sir Herbert Walker, General Manager, Southern Railway); Sir Ernest Bell; Sir Henry P. Burt; Mr. Raymond Carmichael, Chief Engineer, Great Western Railway (and also representing the company); Mr. C. W. Clarke (representing Sir Thomas Callender); Colonel W. V. Constable; Sir Archibald Denny; Mr. J. R. Dixon (representing the Cleveland Bridge & Engineering Co., Ltd.); Sir Duncan Elliot (representing Vulcan Foundry Limited); Sir Robert Gales (Messrs. Rendel, Palmer & Tritton); Mr. W. Gauld, Assistant Government Director of Indian Railway Companies; Sir Alexander Gibb; Mr. H. N. Gresley (representing the London & North Eastern Railway Company); Colonel Sir Gordon Hearn; the Hon. Philip Henderson, of Messrs. Livesey & Henderson (representing Sir Brodie Henderson); Sir Clement Hindley; Sir Cyril W. Hurcomb, Permanent Secretary, Ministry of Transport; Sir Cyril Kirkpatrick; Mr. F. Lydall, Messrs. Merz and McLellan; Sir Malcolm McAlpine; Sir Robert McAlpine; Sir Lynden Macassey, K.C.; Sir Murdoch Macdonald; Brig.-General Sir Henry Maybury, President of the Institution of Civil Engineers; Major E. K. Middleton (representing Walter Scott & Middleton Limited); Mr. Robert Mowbray, Government Director of Indian Railway Companies; Brig.-General Sir Valentine Murray; Maj.-General Sir Philip Nash; Sir David Owen; Sir Robert Perks; Sir Felix Pole; Port of London Authority representatives; Sir Hugh Reid; Mr. J. M. Rendel; Sir Benjamin Robertson; Mr. R. Watson Rome (representing Mersey Docks & Harbour Board); Mr. W. Stantiall; Major H. B. Taylor; Mr. George Terrell; Rt. Hon. J. H. Thomas, M.P.; Sir John E. Thornycroft; Sir Seymour B. Tritton; Mr. J. S. Tritton, Messrs. Rendel, Palmer & Tritton; Mr. Bruce White; Mr. Colin White; Major C. E. Williams (representing the Institution of Locomotive Engineers); Mr. K. A. Wolfe Barry; Sir Trevredyn Wynne; Mr. S. J. Young (representing Sir John Aspinall).

Mr. O. F. Cox, Editor of the *L.M.S. Magazine*, who for family reasons has resigned from the L.M.S.R. service, was educated at Heidelberg and University College, London. He entered the L.N.W.R. service in 1901, and, after four years' training in various departments, was drafted to the District Superintendent's Office, Euston, becoming a District Runner in 1912. During the war he served in the Inland Transport Section of the Ministry of Munitions. In 1919 he returned to the L.N.W.R. and two years later was transferred to the General Manager's Staff Office as the first Male Welfare Supervisor appointed, and in this



Mr. O. F. Cox,

Editor of the London Midland & Scottish Railway Staff Magazine, 1923-34

capacity ran a popular Club for L.N.W.R. lads in the London area. When, in 1923, a special Welfare Department was established under Mr. G. S. Rider as an integral part of the L.M.S. staff organisation, the *L.M.S. Magazine* was instituted and Mr. Cox's literary ability was recognised by his appointment as its Editor. Extremely popular with his immediate colleagues and all grades in the service, Mr. Cox goes into retirement with the sincere good wishes of all with whom he came in contact. He will now be able to devote more time to furthering the interests of the Boy Scout movement, with which he has been associated for many years.

We regret to record the death, on April 16, of Mr. J. Thornton, who, as announced in *THE RAILWAY GAZETTE* of January 12 last, retired from the position of Superintendent of the Line, London Passenger Transport Board,



LOWESTOFT

IT'S QUICKER BY RAIL

ILLUSTRATED BOOKLET FROM TOWN CLERK OR (WITH PARTICULARS OF CHEAP TICKETS AND SERVICES) FROM L.N.E.R. OR L.M.S. STATIONS AND INQUIRY OFFICES

"The view from the train" is the keynote of this year's L.N.E.R. publicity, and the poster reproduced on the left is one of a series in which a scene at the destination is shown in the joint railway and resort advertising

Below is a scene in a saloon carriage of the new L.N.E.R. excursion trains. The wide expanse of window gives good opportunities for viewing the scenery, as emphasised in our illustration



Railways, on December 31. In that issue we published his photograph and biography.

Mr. William Clow, C.B.E., Superintendent, Southern Area, L.N.E.R., left estate valued at £23,625 (£21,771 net).

Lt.-Col. Henry Holmes, M.V.O., late Superintendent of the Line, L.S.W.R., left estate valued at £7,300 (£6,020 net).

Mr. Edgar Worthington, sometime Secretary of the Institution of Mechanical Engineers, left estate valued at £11,846 (£8,937 net).

Major O. Loewenthal, General Manager of the Entre Rios and Argentine N.E. Railways, proceeded on leave to England on March 21.

Mr. M. B. U. Dewar, Chairman of British Timken Limited, has been elected a Vice-President of the Federation of British Industries.

Owing to the centralisation of administrative control of Dorman, Long & Co. at Middlesbrough, Lord Aberconway has resigned from the board of directors.

Lt.-Col. H. E. Gresham, T.D., a Director of Gresham & Craven Limited and the Vacuum Brake Company, left estate valued at £359,980 (£355,765 net).

In amplification of the notification on page 587 in the April 6 issue of THE RAILWAY GAZETTE, recording that Mr. Stephen C. Angel, Stores Superintendent, Buenos Ayres Western Railway, had also been appointed Stores Superintendent of the Buenos Ayres Great Southern Railway, it is now reported that Mr. Thomas Pride, who previously held the latter appointment, is succeeding Mr. L. W. Makin as Stores Superintendent of the Buenos Ayres & Pacific Railway as from July 1.

INDIAN RAILWAY STAFF CHANGES

Mr. F. G. S. Martin, Controller of Stores, E.I.R., has been granted leave for 7½ months, as from March 2. Mr. A. R. A. Hare Duke is appointed to officiate in his place from the same date.

Mr. J. C. Gibson has been appointed to officiate as Deputy Chief Mechanical Engineer (Running), E.I.R., as from February 25.

Mr. S. Simpson, Deputy Chief Mechanical Engineer, Electrical, E.B.R., has been granted eight months' leave, as from April 1.

Mr. H. F. Lockwood, Chief Operating Superintendent, N.W.R., has been granted 5½ months' leave preparatory to retirement, as from April 12.

Mr. H. C. Norbury, on return from leave, has been posted as Chief Accounts Officer, G.I.P. Railway, as from March 9.

The L.M.S.R. May Time-Tables

(See editorial note on page 658)

For the first time for some years past, the London Midland & Scottish Company is this year publishing a new issue of time-tables and time-sheets for the early summer, to operate from April 30 to July 8 inclusive, as is the invariable practice of the London & North Eastern Railway. There are one or two features of interest about the L.M.S. alterations. One of the most important is the division of the 8.30 a.m. from Euston; a breakfast car train will now leave Euston for Manchester at 8.30 a.m., but the Irish Mail will start at 8.45 a.m.—in conformity with the night departure to Ireland at 8.45 p.m.—and will call at Watford instead of Willesden, thus giving a valuable direct service for outer suburban residents to all parts of the main line. A fast run will be made over the 65.1 miles from Watford to Rugby in 70 min., and by curtailment of the Rugby, Crewe, and Chester stops, and acceleration in running, Holyhead will be reached at 2.5 p.m., as before. From May 17 the 12 noon departure from Euston (the Lakes Express), at present running on Fridays and Saturdays only, will run daily, but to Blackpool only; the corresponding up train, due in Euston at 5.20 p.m., will also run daily, but from Windermere as well as Blackpool. The 9.40 p.m. down Birmingham express from London is to call at Blisworth, to give connection to Northampton; and the 11 p.m. express from Euston to Edinburgh and Perth will leave at 10.50 p.m., to allow 10 min. additional running time to Crewe. A considerable expansion of Sunday train services is to take place over the Western Division main line, with new expresses from Euston at 10.10 a.m. and 7.55 p.m. to Birmingham, 11 a.m. to Coventry, 8.5 p.m. to Wolverhampton, 9.50 a.m. to Liverpool, and 10 a.m. to Manchester; in the reverse direction there will be new trains from Birmingham at 10.10 a.m. and 8 p.m., from Wolverhampton at 9.55 a.m., from Liverpool at 10 a.m., and from Manchester at 10.25 a.m.

An important improvement of the services between Liverpool, Manchester and Glasgow is the excision of all stops between Carlisle and Preston on the 4.30 p.m. from Glasgow to the south, whereby Liverpool is to be reached at 9.43 p.m., 32 min. earlier, and Manchester at 9.47 p.m., 28 min. earlier. A new train will leave Carlisle at 7.12 p.m. in order to make the stops and connections previously made by this express. In the reverse direction the 9.47 a.m. from Liverpool is to leave at 9.45 a.m. (and from Manchester at 9.35 instead of 9.40 a.m.), and reach Glasgow at 2.42 instead of 3 p.m., incidentally reintroducing the pre-war booking of 102 min. on this service over the 90 miles from Preston to

Carlisle, which includes the ascent of Shap. The Carnforth stop of the 1.9 p.m. express from Crewe to Glasgow (carrying the through Aberdeen coaches off the 10 a.m. Royal Scot from Euston) is now to be regular, instead of, as hitherto, a conditional stop to pick up, and will give an excellent new connection from London and the Midlands to Barrow-in-Furness, due at 3.59 p.m. The gradual improvement of the residential express service from Manchester to Blackpool is to continue by the acceleration of the 4 p.m. express, which will now reach Lytham at 4.58 instead of 5.10 p.m., and Blackpool Central 13 min. earlier than at present.

On the Midland Division considerable alterations are made in the Saturday services, most of the principal expresses being allowed substantial increases in their running times in an endeavour to secure better punctuality with the heavy week-end loadings. The 5.50 p.m. from Manchester to St. Pancras is to call additionally at Kettering, and be decelerated in running, reaching St. Pancras at 10.8 (instead of 9.55) p.m., and 9 min. later on Saturdays.

In Scotland there is a slight improvement of the services between Glasgow, Perth, and Aberdeen; the 10 a.m. north-bound Granite City is to reach Aberdeen at 1.45 instead of 1.58 p.m., the 1.30 p.m. from Glasgow to start at 1.40 p.m. and pick up the 10 min. in running, and the 5 p.m. to reach Aberdeen at 8.46 instead of 8.55 p.m., with corresponding changes in the opposite direction. But the average time between Glasgow and Aberdeen by the five principal day services in each direction will still be 3 hr. 48 min. going north and 3 hr. 52 min. coming south, for the journey of 153 miles, which works out at an average overall speed of exactly 40 m.p.h. Similarly some small changes are to be made in the services over the Highland Division.

RENEWING SPANISH RAILWAY BRIDGES.—In view of the depression that is being so keenly felt in the iron and steel industry in Spain, the Federation of National Industries has submitted a proposal to the Minister of Public Works, which has resulted in the appointment of a commission composed of representatives of the State, the railways and the iron and steel interests, with the object of studying the renewal of all old, defective or non-metallic bridge spans. Apart from the advantages that would accrue to the companies in the speeding up of services and the running of heavier trains, it is hoped in this way to provide some relief from the depression prevailing in the heavy industries.

Government Ownership of U.S.A. Railways

Under the title "A Diet of Theory and Logic for Starvation. Government Ownership and Operation to Restore Railways to High Credit at Uncle Sam's Expense," the *Bulletin of Railway News and Statistics*, published in Chicago, recently issued the following, upon which we comment editorially on page 657:—

Here is the fly in the 20,000-word pot of ointment which Co-ordinator Joseph B. Eastman prescribes for the cure of the ills that he alleges afflict the railways of the United States:

"Theoretically and logically public ownership and operation meet the known ills of the present situation better than any other remedy."

That fly poisons the otherwise interesting, though unconvincing, narrative in which Mr. Eastman marshals the troubled history of the industry he was sworn to regulate and protect 15 years ago.

After a lengthy discussion of how the railways might emulate the Israelites when ordered by Pharaoh to make bricks without straw, Mr. Eastman admits that "There is no aggressive sentiment in favour of public ownership and operation" and "On the whole there is little effective support in public opinion for public ownership and operation."

Public Fails to Provide Fodder

There is no need of theory or logic to tell what has brought the railways to their knees at the United States treasury to make good their loss of credit with banks, insurance companies and private investors. The loss of traffic that followed the industrial collapse in the last months of 1929 tells the story in the following figures:—

| Year | Ton-miles | Receipts per Ton-mile | Passenger Miles | Receipts per Passenger mile |
|------|------------|-----------------------|-----------------|-----------------------------|
| | (millions) | (cents) | (millions) | (cents) |
| 1929 | 450,180 | 1-088 | 31,165 | 2-811 |
| 1930 | 385,815 | 1-074 | 26,876 | 2-719 |
| 1931 | 311,073 | 1-062 | 21,933 | 2-515 |
| 1932 | 235,300 | 1-056 | 16,997 | 2-221 |
| 1933 | 230,000 | 1-000 | 16,472 | 2-010 |
| Loss | 48-9 | 8-1 | 46-3 | 28-4 |
| | per cent. | per cent. | per cent. | per cent. |

There is nothing theoretical or logical about this loss in traffic, and when reduced to dollars in coin of the realm, gold or statutory under the fostering wand of Dr. Lorenz, the Commission's statistician, it produces the following figures:—

| Year | Receipts from Freight (millions) | Receipts from Passengers (millions) | Total Receipts (millions) |
|------|----------------------------------|-------------------------------------|---------------------------|
| 1929 | 4,863 | 872 | 6,279 |
| 1930 | 4,119 | 728 | 5,281 |
| 1931 | 3,281 | 550 | 4,188 |
| 1932 | 2,469 | 376 | 3,121 |
| 1933 | 2,510 | 325 | 3,107 |
| Loss | 48-8 | 61-6 | 50-5 |
| | per cent. | per cent. | per cent. |

During this distressful period, capitalisation was practically frozen at 22 billion dollars, investment stagnant at

about 26 billion, and dividends from operating income faded from the picture. Is it any wonder that railway credit took to the woods, which refused to conceal its financial nakedness? But the railways carried on, with the Commission turning down constant appeals for help.

Government Ownership Abroad

Now let us see how the Government railways of the world are faring during these days, that Mr. Eastman should wish that system on American transport.

Germany, the model of all State administration of utilities, marked up a deficit of \$15,890,308 in 1932 while paying her 600,595 employees an average of \$843 a year, against \$1,464 paid to American railway employees.

In 1929 the State railways of France (5,648 miles) reported a deficit of over 140 million francs.

Belgium barely keeps out of the red by paying its 90,806 railway employees \$573 a year.

But Italy, with 144,906 railway employees whose average yearly pay in 1932 was \$777, fails to meet operating expenses by \$10,108,198.

Hungary travels the beaten path of State operation of railways with 51,741 men in 1931, and a pack of 17-cent pengos equivalent to \$5,118,803 on its back, and the hardy Magyars appear to like it.

Norway in 1932 had a pay roll averaging \$853 a year and a deficit of \$1,868,585.

While Denmark, with its gold mine of 20,000,000 hens, hung up a deficit of \$6,266,862 in 1932 to get their product to the British market.

Australian railways, which are stewing in the same juice of theory and logic, present the following exhibit of their practical application in a land under the iron rod of labour:—

| | Net Receipts | Interest |
|---------------------------------|--------------|------------|
| Commonwealth Railways (1929-30) | 150,445 | 481,976 |
| New South Wales (1932-33) | 3,384,036 | 7,544,518 |
| Queensland (1932-33) | 1,641,845 | 1,584,191 |
| Victoria (1932-33) | 2,932,084 | 3,221,710 |
| Western Australia (1932-33) | 820,552 | 996,233 |
| South Australia (1931-32) | 612,337 | 1,394,251 |
| New Zealand (1932-33) | 850,544 | 2,230,655 |
| Total | 10,090,953 | 17,453,534 |

Wages in Australia average all the way from \$691 a year in Victoria to \$1,161 in Queensland.

What Canada knows about Railways

Canada, with the coifers of the British Empire always on tap in Threadneedle Street to succour distressed colonies which have followed the lure of theorists and logicians into the bottomless bog of public ownership, affords a near-at-hand study of that blight on orderly railway promotion and operation. For all railway purposes the Dominion is divided into two camps, the Canadian Pacific and the Canadian National, both

heavily endowed by the State at the start, and transcontinental in mileage and operation. But there the similarity of conditions ends. The Canadian Pacific graduated into private ownership and operation, and the Canadian National was taken over by the Dominion Government. After the inclusion of the Grand Trunk and the Grand Trunk Pacific in 1921, it blossomed out with a total capitalisation of \$2,207,502,000, or \$107,562 a mile. In 1922 Sir Henry W. Thornton was elected Chairman of the Board of Directors and President, with all manner of engagements of a free hand, which he proceeded to use in the development of the Canadian National into a really first-class railroad, but with an unbroken line of deficits ranging from \$40,000,000 to \$100,000,000 a year, and the interest on an ever-increasing funded debt payable for the most part in gold at from 3½ per cent. up to 6½ per cent. In 10 years the funded debt has been increased by half a billion. Sir Henry resigned in 1932, and both parties, Liberal and Conservative, will fight it out over his successor. It would take more than a 20,000-word pamphlet to tell of the rise, exploitation, and surrender of the Canadian National.

The woeful tale of Government operation in Canada in 1932 is told in these five lines:—

| | | |
|-------------------------------|-----|---------------|
| Operating receipts | ... | \$139,948,317 |
| " expenses | ... | \$134,300,983 |
| Ratio of expenses to earnings | ... | 85-96% |
| Ratio of payroll to earnings | ... | 66-70% |
| Ratio of taxes to earnings | ... | 2-65% |

Government Ownership in U.S.A.

The experiment of American railways under Federal control, which began with the usual false ballyhoo of an emergency, ended with a net loss to the Government of over \$1,500,000,000 and cost the American public the following amounts:—

| | \$ |
|----------------------------|-----------------|
| Increased rates and fares— | |
| 1918 over 1917 | 868,000,000 |
| 1919 over 1917 | 1,116,000,000 |
| 1920* over 1917 | 1,080,000,000 |
| Revolving Fund— | |
| 1918 | 500,000,000 |
| 1919 | 750,000,000 |
| Total | \$4,314,000,000 |

* Eight months.

In 1917 the average freight per ton-mile, including the advance under the Adamson Act, was 7-28 mills; in 1920 it was 10-69, and the average passenger receipts had been advanced from 2-097 cents to 2,755.

These advances were the direct result of Order No. 28, issued May 25 by Director-General McAdoo, and Order No. 27, which increased wages so that the compensation of railway employees rose from \$1,739,452,000 in 1917 to \$3,681,801,000. This raised the compensation of employees from \$1,004 a year in 1917 to \$1,820 in 1920.

Space precludes an attempt to depict the scene of desolation, scrapped equipment, and broken promises that blasted the hopes of nearly a million stockholders when their property was returned with more promises in the Transportation Act of 1920.

Transport Developments in 1933

On April 17 Mr. R. Bell, Assistant General Manager, London & North Eastern Railway, addressed a meeting of the members of the Metropolitan Graduate and Student Society of the Institute of Transport and of the L.N.E.R. (London) Debating Society on the subject of "Transport Developments in 1933." Mr. Whitelaw, Chairman of the London & North Eastern Railway, presided, and amongst a large audience were Messrs. Roger T. Smith, W. V. Wood, J. A. Kay, C. E. R. Sherrington, G. F. Thurston, C. H. Newton, H. H. Mauldin, V. M. Barrington-Ward, A. L. Gibson, G. S. Begg, G. A. Musgrave, C. Dandridge, L. R. Christie and A. E. Kirkus.

Mr. Bell reviewed the improvement in the industrial situation of the country last year, dealing with the principal industries in turn and pointing out the effect of their increased activity on railway traffics. For example, the tonnage of iron ore carried by rail had increased by 13 per cent. and the tonnage of vegetables by 12 per cent. It was stated that nearly four-fifths of our vegetables were produced on the L.N.E.R. During the past winter the L.N.E.R. handled 1,218,500 tons of sugar beet, and through the careful regulating of the forwardings, had avoided congestion at the factories. There was also an increase of 27 per cent. in the weight of bricks and tiles forwarded from L.N.E.R. stations, showing that the building trade had been more brisk. On the whole the coal trade had not recovered, though there had been a record shipment of over five and three-quarter million tons at Blyth, the chief outlet of the Northumberland coalfield.

The net revenue of the railway companies was 9 per cent. better than it had been in 1932, but was 36 per cent. below 1929, when the L.N.E.R. had been unable to pay any dividend on thirty-six millions of its stock. Possibly the failure of the company to make any return on 144 millions of capital during the past two years marked the lowest depth of the trade cycle, but the company would have to face a heavy burden of expenditure on rolling stock and equipment during 1934.

The passing of the Road and Rail Traffic Act should result in some measure of stability being introduced into the business of carrying goods by road. The probable tendency would be for a number of large firms of cartage contractors to take over small hauliers by a gradual process. The railway companies now owned 6,512 motor vehicles and associated cartage undertakings had 2,000 more motors at work. Motor transport was now extending rapidly in Germany, where a scheme for constructing 5,000 miles of motor roads was contemplated.

The steps taken to regulate motor transport in some of the Dominions were explained, and the speaker then went on to deal with the railroad posi-

tion in Canada where, by the pooling of services, arrangements had been made to save 500,000 passenger train miles a year. The Canadian railroads had cut down their expenses drastically and had been relieved of the fear of further competition from the deepening of the River St. Lawrence.

In the United States the railroads had handled 3 per cent. more freight cars than they hauled in 1932 and 22 per cent. fewer than in 1931. Operating results were satisfactory, the average speed of freight trains being a record. The emergency Railroad Transportation Act of June, 1933, had assisted the railroads by leaving freight rates to be fixed in relation to what the traffic would bear. A Federal Co-ordinator of Transportation was now working with the railroads in an effort to do for them in two years all that 11 years of amalgamation, with the aid of a year's pooling of competitive traffic, had effected in this country.

Dealing next with passenger traffic, Mr. Bell briefly described the effect of the London Passenger Transport Act and explained the functions of the board and the Standing Joint Committee to deal with questions affecting both the board and the main line railway companies. The main lines

carried altogether 19 millions more ordinary passengers in 1933 than in 1932, an increase of over 3½ per cent., but the corresponding increase in receipts had been less than 1 per cent. No country was finding its passenger traffic to be a lucrative business. This statement was illustrated by references to German and American experience and to trials being made in these countries with fast trains of light build.

Air competition was becoming intensive. Since 1930 the number of passengers passing by sea between the Continent and Great Britain had decreased by 25 per cent., whilst the number of passengers by air had increased by 114 per cent. A dozen companies had also taken up civil aviation at home, and the railway companies had therefore entered into a compact with Imperial Airways, though aeroplanes would be put only on two or three routes at present. Railway Air Services Limited might in time exert a steadying influence on the growth of civil flying in the United Kingdom and Ireland, and ensure that routes were mapped out on a definite plan with due regard to connecting rail, road, and steamship facilities.

The general conclusion reached by the lecturer was that during 1933 a definite advance towards order and system in the transport world had been achieved.

New London Transport Time-Tables

A new series of official time tables covering all the rail and road services in the London Passenger Transport Area is to be published shortly by Index Publishers (Dunstable) Limited by arrangement with London Transport. The guides will be seven in number, two being devoted respectively to all Metropolitan Railway and Green Line coach services. The London Transport Area has been divided for time table purposes into five areas, to each of which one of the remaining five guides will be allotted. The London area guide, covering the central districts, extends northwards to Chingford, southwards to Croydon, eastwards to Erith, and westwards to Hanwell.

The four circumferential districts have been planned broadly to take railways as their limits, in such a way that duplication of tables in guides covering adjacent districts is obviated. The North Western area, for example, terminates eastwards with the area served by the L.M.S.R. main line from St. Pancras through Radlett and St. Albans to Luton. The western limit of the North Eastern area, similarly, is the L.N.E.R. main line through Barnet and Hatfield to Hitchin. Northwards, these areas extend to Luton and Hitchin respectively.

The North Eastern and South Eastern

Areas take the River Thames as their dividing line and their Eastern limits are marked by Brentwood and Gravesend. By continuing southwards to include Ascot, Egham, and Staines, the North-Western area allows all the Southern Railway electric services in the Windsor district to be included in the same book as the G.W.R. service thence. The South Western area is bounded northwards by the country adjacent to the Southern main line (Western section) through Woking, and eastward by the Central section Eastbourne line through East Grinstead.

The guide for each area will include all the road and rail services comprised therein. The sections showing respectively main line suburban services and London Transport rail and road services will be printed on paper of different colours so that the user will be able to open the book at once at the times of trains, buses, trams or coaches as required. Maps are to be a special feature, both in the sectional guides and the complete Green Line and Metropolitan tables already referred to. It is hoped that the first edition will be on sale on June 1. Thenceforward the sectional books will appear monthly. The Green Line coach table will be issued about four times a year at varying intervals and that of the Metropolitan Line as circumstances demand.

L.M.S. 4-6-2 Locomotive Performance

The first L.M.S.R. 4-6-2 locomotive, No. 6200, *The Princess Royal*, made a fine run on Tuesday, April 3, on the up Royal Scot, which is booked non-stop over the 299 miles from Carlisle to Euston. The train was heavier than usual, weighing 465 tons tare and about 500 tons loaded, and yet at no time on the complete run from Symington to Euston was the engine worked at more than 25 per cent. cut off, except on starting. With full regulator and only 20 per cent. cut off the engine went over Beattock summit at 34½ m.p.h. Going up to Shap, 25 per cent. was used throughout, the lowest speed in this case being 30 m.p.h. On the steep down grades speed was kept very moderate, rarely rising over 70 m.p.h., but on full regulator and 20 per cent. cut off, the engine accelerated from 40 to no less than 73½ m.p.h. on the dead level between Lancaster and Preston, and under the same conditions of working the 69.9 miles from Welton to Willesden Junction were run at an average of 67 m.p.h.

The following is a log of the journey:—

| L.M.S. UP ROYAL SCOT | | | |
|--|------------------------|------------------|------|
| Load : 15 coaches, 465 tons tare, 500 tons full. | | | |
| Engine : 4-6-2 No. 6200, <i>The Princess Royal</i> . | | | |
| Miles | | Min. | Sec. |
| 0.0 | Symington | 0 | 00 |
| 17.2 | Beattock Summit | 21 | 05 |
| 27.2 | Beattock | 30 | 43 |
| 41.1 | Lockerbie | 43 | 43 |
| | | p.w.r. check | |
| 58.3 | Gretna | 60 | 15 |
| 66.9 | Carlisle | 70 | 30 |
| 0.0 | | 0 | 00 |
| 4.9 | Wreay | 10 | 57 |
| 13.1 | Plumpton | 23 | 06 |
| 17.9 | Penrith | 28 | 22 |
| 31.5 | Shap Summit | 48 | 53 |
| 37.0 | Tebay | 54 | 35 |
| 50.0 | Oxenholme | 67 | 21 |
| | | p.w.r. check | |
| 62.8 | Carnforth | 81 | 16 |
| | | p.w.r. check | |
| | | ½ min. lost | |
| 69.1 | Lancaster | 87 | 35 |
| 80.6 | Garstang | 99 | 24 |
| | | signals | |
| 90.1 | Preston | 109 | 15 |
| | | ½ min. lost | |
| | | signals | |
| 105.3 | Wigan | 128 | 30 |
| 117.0 | Warrington | 140 | 20 |
| | | signals | |
| | | 1 min. lost | |
| 141.1 | Crewe | 167 | 30 |
| 151.6 | Whitmore | 182 | 35 |
| 165.6 | Stafford | 195 | 35 |
| 189.1 | Tamworth | 218 | 48 |
| | | colliery pitfall | |
| | | slack, | |
| | | 1½ min. lost | |
| 202.0 | Nuneaton | 233 | 22 |
| 216.6 | Rugby | 248 | 03 |
| 239.3 | Roads | 271 | 38 |
| 252.5 | Bletchley | 282 | 35 |
| 267.5 | Tring | 297 | 47 |
| 293.8 | Willesden Jc. | 320 | 55 |
| | | signals | |
| | | 1 min. lost | |
| 299.2 | Euston | 329 | 45 |

Delays caused a loss of fully 7½ min. in running, while the most exemplary caution was shown at all places where speed restrictions are in force, and the

arrival in Euston was four minutes early. This gave the excellent net time of 322½ min.—an average speed of 55.7 m.p.h. The 262.3 miles from Shap summit to Willesden were run at a net average of exactly 60 m.p.h.

From Glasgow to Carlisle, the engine was manned by Driver Harrison and Fireman Hill of Polmadie shed, and at Carlisle, Driver Earl and Fireman Lubnow of Camden took charge.

Cutting and Welding of Steel

A paper covering the two subjects of cutting of steel by oxy-coal-gas process and electric welding was read before a meeting of the West Scotland Branch of the Association of Mining Electrical Engineers by Mr. G. M. Buchanan of Mavor & Coulson Limited, Glasgow.

In the first section of his paper, Mr. Buchanan described the principle of the metal cutting operation, and explained that cutting by oxygen is essentially a chemical process in which the oxides of iron are formed and blown away before the iron reaches its melting point, and the necessary temperature is chiefly maintained by the heat of the combustion itself. To make the process continuous it is necessary in practice to maintain an independent heating jet as well as the oxygen cutting jet. To start the process, coal gas or other suitable combustible is used in conjunction with low pressure oxygen for heating the starting point. When the temperature is sufficiently high the cutting oxygen is released and the chemical effect already mentioned is produced. The disturbance of the metal due to the heat of the cutting flame probably penetrates about ⅛ in. but does not interfere with the strength of the plate.

The author explained that the cost of cutting by this process for general use is rather difficult to estimate. The cost depends on whether the machine can be kept employed for 47 hours of the week, and also upon the kind of work on which it is engaged. For the cutting of plates ½ in. to 1 in. thick it has been found that the cost runs out at about ¼d. a sq. in., and this includes interest and depreciation, rent for the floor space occupied, maintenance, power for operation, oxygen, acetylene, coal gas, operators' wages at 1s. 2d. per hour plus 100 per cent. on cost on wages. This means that 12 in. of ½-in. thick plate can be cut for 1½d. It is to be noted that when plates of, say, ½-in. thick are sheared they have to be straightened afterwards whereas with the oxy-cutting process there is little or no straightening to be done.

Electric welding, the second part of

the paper, was shown to be closely associated with the cutting of plates and Mr. Buchanan pointed out that the ideal combination in the fabrication of steel structures is the oxy-cutting machine and the electric welding process; structures so manufactured have light weight combined with great strength and reliability. The author described the many forms of electric welding and said that there is no reason to-day to doubt their reliability, but the welder must be a skilled operator. Welded structures are strong, rigid and of light weight. The average savings to be effected depend upon the number of parts required, the intricacy of the part and the finished weight. For instance, bedplate formerly of cast iron can now be fabricated with a saving of 30 per cent. in cost and 25 per cent. in weight. Examples of many welded products were shown by means of lantern slides, and a film illustrating the method by which the molten metal in the arc welding process travels from the electrodes to the work was also shown.

Canadian National Railways

The Hon. C. P. Fullerton, Chairman of the Trustees of the Canadian National Railways, has addressed a message to the employees of the company. He points out that three months have passed since the trustees appointed under the Canadian National-Canadian Pacific Act, 1933, took office. He was not one of those who considered the Canadian National Railways situation as hopeless. For months past there had been on foot a propaganda looking to the amalgamation of the Canadian National and Canadian Pacific Railways. The two grounds put forward in support of the proposals for amalgamation were: (1) That a very large saving could be effected; (2) That it would relieve management from the evils of political influences. As to the first, the Canadian National Railways had, through economical management, greatly reduced their operating expenses, total disbursements on that account in 1933 being \$113,000,000 under the 1928 figures. In 1933, the gross earnings of the two railway systems, Canadian Pacific and Canadian National, amounted only to \$262,789,430. When it was remembered that the operating revenues of both railways were under \$263,000,000, it could be readily understood that the saving of such a further sum as was suggested in some quarters was quite impossible. In his opinion, if the two railways were prepared whole-heartedly to join in the co-operation directed by Parliament the savings would be approximately as great as they would be under amalgamation. As to political influences, to-day the Canadian National Railways were just as free from having to consider matters from a political angle as was any railway in Canada, and it was the intention of himself and his fellow-Trustees that this should remain so.

BRITISH RAILWAY STATISTICS

"The Railway Gazette" monthly table of freight and passenger traffic figures for January, 1934, as compared with the corresponding period in 1933, compiled from the Ministry of Transport Statement No. 170

| Description | Great Britain* | Great Western | London & North Eastern | London Midland & Scottish | Southern |
|---|----------------|---------------|------------------------|---------------------------|-------------|
| PASSENGER TRAIN TRAFFIC— | | | | | |
| Number of passenger journeys (excluding season-ticket holders) | 95,463,427 | 6,752,903 | 13,220,980 | 21,680,993 | 16,269,394 |
| Increase (+) or decrease (—) | + 10,061,507 | + 703,080 | + 1,507,062 | + 2,740,894 | + 1,558,172 |
| Passenger receipts (excluding season-ticket holders) | £3,052,780 | £381,823 | £576,616 | £892,802 | £663,239 |
| Increase (+) or decrease (—) | + £150,098 | + £3,053 | + £17,000 | + £36,499 | + £42,550 |
| Season-ticket receipts | £1,028,785 | £71,070 | £208,249 | £283,825 | £304,424 |
| Increase (+) or decrease (—) | + £2,787 | + £1,499 | + £9,822 | + £9,388 | + £13,906 |
| Parcels and miscellaneous traffic receipts (excluding parcels post) | £984,355 | £175,896 | £296,831 | £371,928 | £115,123 |
| Increase (+) or decrease (—) | + £65,496 | + £7,982 | + £17,330 | + £36,174 | + £1,881 |
| FREIGHT TRAIN TRAFFIC— | | | | | |
| Freight traffic (tons) (excluding free-hauled) | 21,906,361 | 5,222,907 | 9,831,566 | 10,068,284 | 1,368,452 |
| Increase (+) or decrease (—) | + 2,442,887 | + 400,991 | + 1,137,790 | + 948,697 | + 165,185 |
| Net ton-miles (excluding free-hauled) | 1,235,352,092 | 219,942,559 | 420,473,115 | 501,736,453 | 57,616,202 |
| Increase (+) or decrease (—) | + 170,338,745 | + 22,147,316 | + 65,611,689 | + 69,906,740 | + 6,436,827 |
| Average length of haul (miles) (excluding free-hauled) | 56.39 | 42.11 | 42.77 | 49.83 | 42.10 |
| Increase (+) or decrease (—) | + 1.67 | + 1.09 | + 1.95 | + 2.48 | + 0.43 |
| Freight traffic receipts | £6,747,358 | £1,119,000 | £2,262,455 | £2,768,000 | £379,254 |
| Increase (+) or decrease (—) | + £702,185 | + £117,000 | + £259,455 | + £269,000 | + £36,426 |
| Receipts per ton-mile | 1.311d. | 1.22d. | 1.29d. | 1.32d. | 1.58d. |
| Increase (+) or decrease (—) | + 0.051d. | + 0.01d. | + 0.06d. | + 0.07d. | + 0.03d. |
| Freight train-loads— | | | | | |
| Average train-load (tons) | 129.56 | 132.94 | 137.18 | 127.51 | 105.14 |
| Increase (+) or decrease (—) | + 8.50 | + 7.70 | + 8.56 | + 9.10 | + 4.62 |
| Net ton-miles— | | | | | |
| Per train engine-hour | 962.49 | 1,038.21 | 1,014.11 | 935.40 | 772.26 |
| Increase (+) or decrease (—) | + 12.47 | + 34.90 | + 20.86 | + 5.86 | + 16.53 |
| Per shunting-hour | 851.06 | 766.18 | 948.55 | 881.18 | 552.11 |
| Per total engine-hour | 451.68 | 440.85 | 490.12 | 453.74 | 321.94 |
| Net ton-miles per route-mile per working day | 2,701 | 2,579 | 2,923 | 3,171 | 1,190 |
| Increase (+) or decrease (—) | + 364 | + 252 | + 447 | + 431 | + 135 |
| Wagon-miles. Total | 349,685,425 | 60,558,650 | 122,052,014 | 147,147,268 | 17,627,222 |
| Increase (+) or decrease (—) | + 39,712,119 | + 4,808,038 | + 17,085,890 | + 15,480,938 | + 1,934,741 |
| Percentage of loaded to total | 65.61 | 67.44 | 66.90 | 66.90 | 65.19 |
| Wagons per train— | | | | | |
| Total | 34.60 | 34.02 | 35.49 | 34.77 | 31.10 |
| Increase (+) or decrease (—) | + 1.51 | + 1.35 | + 1.55 | + 1.54 | + 1.38 |
| Loaded | 22.70 | 22.94 | 22.44 | 23.26 | 20.27 |
| Empty | 11.90 | 11.08 | 13.05 | 11.51 | 10.83 |
| Train-miles. Coaching— | | | | | |
| Per train-hour | 14.89 | 13.62 | 13.92 | 14.42 | 17.38 |
| Per engine-hour | 11.94 | 10.89 | 10.90 | 10.96 | 14.22 |
| Train-miles. Freight— | | | | | |
| Per train-hour | 8.70 | 9.38 | 8.62 | 8.50 | 9.08 |
| Per engine-hour | 3.49 | 3.33 | 3.61 | 3.55 | 3.01 |
| Engine-miles. Total | 44,132,970 | 6,934,923 | 12,213,604 | 16,223,010 | 5,873,121 |
| Increase (+) or decrease (—) | + 1,971,919 | + 218,046 | + 755,081 | + 786,463 | + 149,676 |
| Mileage run by engines. Total train miles— | | | | | |
| Coaching | 21,405,410 | 2,910,083 | 4,893,938 | 6,741,624 | 4,204,086 |
| Freight | 10,106,875 | 1,780,228 | 3,439,473 | 4,231,633 | 566,764 |
| Engine-hours in traffic. Total | 4,891,682 | 828,027 | 1,469,223 | 1,892,993 | 301,506 |
| Increase (+) or decrease (—) | + 309,683 | + 33,529 | + 114,654 | + 131,758 | + 23,910 |
| Shunting miles per 100 train-miles— | | | | | |
| Coaching | 7.63 | 6.94 | 6.49 | 8.65 | 8.18 |
| Freight | 76.16 | 86.73 | 71.18 | 71.97 | 100.34 |

* All standard-gauge railways

Passenger Traffic Statistics: Number of Journeys, Receipts, and Receipts per Journey (excluding Season-Ticket Holders)—January, 1934

| Subject | Great Britain | Great Western | London & North Eastern | London Midland & Scottish | Southern | Cheshire Lines Committee | Liverpool Overhead | London Passenger Transport Board† | Mersey |
|--------------------------------|---------------|---------------|------------------------|---------------------------|------------|--------------------------|--------------------|-----------------------------------|---------|
| Full fares— | | | | | | | | | |
| Passenger journeys | 32,432,142 | 730,995 | 1,226,756 | 1,667,083 | 2,718,855 | 24,393 | 159,338 | 25,000,109 | 98,415 |
| Gross receipts | £868,095 | £72,965 | £115,863 | £128,398 | £183,846 | £3,420 | £1,710 | £344,817 | £1,697 |
| Receipts per passenger journey | 6.42d. | 23.96d. | 22.67d. | 18.48d. | 16.23d. | 33.65d. | 2.58d. | 3.31d. | 4.14d. |
| Reduced fares— | | | | | | | | | |
| Excursion and week-end— | | | | | | | | | |
| Passenger journeys | 34,149,938 | 3,693,779 | 7,690,524 | 11,927,298 | 7,678,360 | 377,530 | 109,857 | 995,356 | 678,584 |
| Gross receipts | £1,620,898 | £251,369 | £357,467 | £585,549 | £349,172 | £18,820 | £838 | £20,929 | £9,721 |
| Receipts per passenger journey | 11.39d. | 16.33d. | 11.16d. | 11.78d. | 10.91d. | 11.96d. | 1.83d. | 5.05d. | 3.44d. |
| Workmen— | | | | | | | | | |
| Passenger journeys | 25,614,582 | 1,960,236 | 3,418,601 | 7,124,006 | 5,287,272 | 248,206 | 221,250 | 6,243,614 | 199,550 |
| Gross receipts | £367,500 | £28,379 | £54,477 | £112,084 | £85,869 | £4,191 | £1,802 | £68,169 | £1,778 |
| Receipts per passenger journey | 3.44d. | 3.47d. | 3.82d. | 3.78d. | 3.90d. | 4.05d. | 1.95d. | 2.62d. | 2.14d. |
| Other descriptions— | | | | | | | | | |
| Passenger journeys | 3,265,745 | 367,893 | 884,823 | 962,038 | 584,745 | 40,287 | 3,868 | 344,564 | 12,361 |
| Gross receipts | £194,998 | £29,110 | £48,362 | £66,124 | £44,172 | £2,653 | £17 | £2,695 | £150 |
| Receipts per passenger journey | 14.33d. | 18.99d. | 13.12d. | 16.50d. | 18.13d. | 15.80d. | 1.05d. | 1.88d. | 2.91d. |
| Total— | | | | | | | | | |
| Passenger journeys | 95,463,427 | 6,752,903 | 13,220,980 | 21,680,993 | 16,269,394 | 690,430 | 494,313 | 32,583,643 | 988,910 |
| Gross receipts | £3,052,780 | £381,823 | £576,616 | £892,802 | £663,239 | £29,099 | £4,367 | £436,614 | £13,346 |
| Receipts per passenger journey | 7.67d. | 13.57d. | 10.47d. | 9.88d. | 9.78d. | 10.12d. | 2.12d. | 3.22d. | 3.24d. |

† Includes passengers originating on the railway undertakings, and on the Whitechapel and Bow Joint Railway

NOTES AND NEWS

British Industries Fair.—The Birmingham section of the British Industries Fair, 1935, will be open from May 20 to May 31 inclusive. The London exhibition will open on the third Monday in February—February 18, 1935, as before.

French Dance Car.—A special dancing saloon car formed part of the train which ran from Paris to the Riviera this Easter to accommodate an excursion party organised by the Paris evening paper *L'Intransigeant*. Both on the outward and homeward journey the dancing saloon was well patronised.

L.N.E.R. Containers for Bicycles.—The L.N.E.R. has recently constructed a number of specially-fitted containers for the conveyance of bicycles from manufacturers' works to railhead or other points of distribution. Each container is built to carry 70 cycles in two tiers, each of 35.

Reduced London Transport Fares.—On Monday, April 16, ordinary and workmen's fares to and from certain stations between Finsbury Park (Great Northern & City Line) and Trinity Road (City & South London Line) were reduced. Examples of reduced ordinary fares are: Finsbury Park and Moorgate, 3d.; Finsbury Park and Balham, 7d.; Drayton Park and Elephant & Castle, 4d.; and Highbury and Bank, 2½d.

L.M.S. Amateurs to Produce "London Wall."—John van Druten's three-act comedy of life in a city office, "London Wall," is to be the next production of the L.M.S.R. (London) Amateur Dramatic Society and will be presented at the Cripplegate Institute, Golden Lane, E.C., on Monday, May 14, at 8 p.m. This will be the second play to be presented by the society, which made a successful debut last autumn with its production of "The Sport of Kings." Mr. W. F. Humphreys will again produce, and the honorary ticket secretary is Mr. J. L. Gedyne, L.M.S. central offices, Euston station.

Antofagasta Railway Articles.—A petition seeking confirmation of alterations in its articles will be submitted by the Antofagasta (Chili) & Bolivia Railway Company before Mr. Justice Bennett in the Chancery Division on April 23. The present articles do not give the company any express power to lend money, and it is desired to obtain this power, which will enable the company to lend money to the Bolivian Government in connection with the completion of the Potosi-Sucre Railway. Other alterations will give the company power to carry on business as contractors for the construction of railways, tramways, lines of telegraph and telephones and other means of transport or communication in Chili, Bolivia, or elsewhere, and to establish, maintain

and work systems of motor or aerial conveyance.

Polish Railway Exports.—Within the past few weeks, 1,790 tons of rails have been shipped from Poland for use on Brazilian railways. Since the beginning of the year Poland has exported to Brazil 9,438 tons of rails and other railway material.

Railway Electrification in Holland.—It has been decided to electrify the line between Rotterdam and the Hook of Holland, a distance of 17½ miles. The electrification extension between Rotterdam and Dordrecht, 12½ miles, is to be brought into operation on May 15. No new rolling stock has been built for this line, but new stock will probably be required for the Rotterdam-Hook line.

Chinese Purchasing Commission.—Contracts to the value of £300,000 were placed in England during 1933 by the Chinese Government Purchasing Commission. The commission buys railway materials and other equipment in Britain for the Chinese Government out of the British Boxer Indemnity money. Its total expenditure has reached £1,060,000 sterling. The Chinese Government has reappointed the commission for a further period of three years' service.

Transport in Argentina.—Reports from Buenos Aires as to the appointment of a commission for the purpose of co-ordinating all transport undertakings in Argentina would appear to have confused two things. A commission appointed by the municipality of Buenos Aires to study the problem of co-ordinating transport in that city has recently recommended the formation of a body somewhat in the nature of the London Passenger Transport Board. The President of the Republic is considering the question of appointing a committee, on which the railways, commerce, industry, &c., would be represented, to investigate the railway situation throughout the country and to suggest remedies. This committee has not yet been appointed.

Trevithick Centenary Commemoration.—As a permanent memorial of the centenary of the death of Richard Trevithick, the great inventor and engineer, which occurred last year, a tablet is to be unveiled on Monday, April 23, by Major The Hon. Oliver Stanley, M.P., Minister of Transport, recording the passenger locomotive experiments that Trevithick made in London in 1808. The exact site of these trials is not known, but has been narrowed down to within the area on which University College now stands. The authorities of the college welcomed the proposal to place the tablet there, and it is to be situated appropriately enough on the wall of the engineering laboratory facing Gower Street, where it can be

seen by the man in the street. The tablet is the work of Mr. L. S. Merrifield, who executed the striking statue of Trevithick at Camborne, Cornwall, unveiled by H.R.H. The Duke of York in 1932.

G.I.P. Annuities.—It is officially notified, in accordance with the provisions of the Great Indian Peninsula Railway Purchase Act, 1900, that on April 3, 1934, a total sum of £17,184,837 had been invested for the purpose of providing a sinking fund in respect of the annuities, class B. The sinking fund was based on the assumption that on August 17, 1948 (the date when the annuity terminates), the holders of annuities of this class would receive about £26 2s. per £1 of annuity.

The State Railways of Finland.—The total length of the State system in 1933 was 5,101 km., and a further 110 km. are to be completed by the end of 1934. Four lines, totalling 483 km., are at present under construction and two others, totalling another 806 km., are proposed. Gross revenue fell heavily in 1931 and again to a lesser degree in 1932, but in the first nine months of 1933 an improvement of 6 per cent. over the same period in 1932 was registered, and net revenue amounted to roughly 10 per cent. of the gross.

Robert Stephenson & Co. Ltd.—This company has decided that the best way to meet the situation arising out of lack of profitable business is to make a return of capital to the shareholders. There are 275,000 fully-paid £1 shares in issue, and it is proposed, at the meeting on May 8, to submit resolutions returning 5s. per share as being capital in excess of the company's wants. Each of the 275,000 shares of 15s. is to be subdivided into three 5s. shares, and the authorised capital of the company then increased to its former amount of £275,000 by the creation of 275,000 new shares of 5s. The company has paid 4 per cent. on its ordinary capital for several years past.

Crusaders at Swindon.—A party of 600 boys from public and private schools, associated with the Crusaders' Union, visited Swindon Works of the Great Western Railway on Tuesday last. A 12-coach train, including six restaurant cars, was provided from Paddington, drawn by "King" class locomotive No. 6003, *King George IV*, which carried on the front of the smoke-box a Crusader badge 4 ft. square. Lunch was served on the journey from Paddington to Swindon, and tea on the return journey. Fifty guides were provided for the works' tour, which lasted for three hours, and special attractions were one of the latest "Castle" class locomotives in steam on the testing plant, and a "King" 4-6-0 in steam outside the erecting shop, over the footplate of which all the boys were conducted. With a gross load of 465 tons, the special train was worked over the 77½ miles from Swindon to Paddington

in 76 min. 49 sec., a maximum speed of 74 m.p.h. being attained at Wantage Road.

L.M.S.R. Advertising and Publicity Department.—The offices of the L.M.S.R. Advertising and Publicity Department have been removed from Nos. 1 and 2, Euston Square, to Euston House, Seymour Street, N.W.1. The Department is located on the fourth floor, and press inquiries will be dealt with in Room 400C. The telephone number of the press section remains unaltered, namely, Museum 2900, Extension 243.

Traffic in Dead Rabbits.—Mr. G. Cole Deacon, submitting to the Railway Rates Tribunal, on Tuesday, April 17, revised rates for the conveyance of small parcels by L.M.S.R. passenger trains, said that as a result of putting into operation reduced rates for the conveyance of rabbits from Scotland and the North of England, the L.N.E.R. Company, in its Northern and Southern Scottish areas, carried during December 238 tons of dead rabbits by passenger trains. The Court sanctioned the proposals.

Railway Benevolent Institution.—A special meeting of subscribers will be held at 4.45 p.m. on April 23, in the Board Room, Railway Clearing House, 123, Seymour Street, N.W.1, for the purpose of appointing two trustees. The seventy-sixth anniversary Festival of the Railway Benevolent Institution will be held in May next. The Institution, which now pays allowances to 3,760 recipients, and whose weekly bill for the maintenance and education of railway servants' children is £1,400, hopes that by this date it will be able to announce a substantial list of contributions.

The Swiss Federal Railways Assisted by the Confederation.—As a result of a Federal Decree, passed at the end of March, 1,500,000 fr. have been placed at the disposal of the Swiss Federal Council, towards the reduction of fares on the railways and other transport undertakings, with a view to encouraging tourist traffic from abroad, during both the summer and the winter holiday season. By virtue of the arrangement in question, the Swiss Confederation will refund one-half of the 30 per cent. reduction granted by the various transport undertakings on return tickets to Switzerland issued by the official Federal Railways agency and other travel bureau in foreign countries to tourists whose visit to Switzerland extends over a minimum of seven days. A similar reduction was introduced during the 1933/34 season and is said to have proved most successful in tempting a greater number of foreign visitors to this country. The continuation of this measure has been strongly advocated by all the transport undertakings concerned.

Central Wages Board.—The Central Wages Board for the railways

met in London on April 16. It is understood that there was no variation in the sliding scale agreement which is related to the cost of living. The board considered several claims which had been deferred from previous meetings. No agreement was reached on the question of the claim by the National Union of Railwaymen and the Associated Society of Locomotive Engineers and Firemen for the abolition of rosters for enginemmen.

Railway Wages Cuts.—Representatives of the four group companies met representatives of the three railway trade unions on Monday, April 16, for the purpose of discussing an application made by the trade unions for the discontinuance of the percentage deductions and other variations in working conditions operating under the National Wages Board decision of March 5, 1931, and certain other claims. The trade union representatives explained the reasons which prompted their applications, and the representatives of the railway companies, while not being hopeful of being in a position to make the desired concessions, undertook to examine the position and to give a considered reply at a further meeting in due course.

The Week's Road Accidents.—The Secretary to the Ministry of Transport issues the following return, for the week ended April 7, of persons killed or injured in road accidents:—

| | Killed in accidents reported during the week | Reported during the week as having died as the result of accidents occurring in previous weeks | Injured in accidents reported during the week |
|---------------|--|--|---|
| England ... | No. 76 | No. 34 | 3,509 |
| Wales ... | 8 | — | 179 |
| Scotland ... | 6 | 2 | 347 |
| Great Britain | 90 | 36 | 4,035 |

The total fatalities of the week as the result of road accidents are therefore 126.

Retired Railway Officers' Society.—We were very pleased to hear once again of our friend, Mr. J. F. Bradford, M.Inst.T., who was formerly Passenger Superintendent on the London & North Western Railway, later the L.M.S. Railway, for the Birmingham District. Mr. Bradford retired from the position of "Passenger Manager," as it was afterwards designated, in May, 1932. He entertained the members of the society at their monthly meeting held at the Great Eastern Hotel, Liverpool Street, on April 10, with a short talk, the subject being: "The serious and humorous sides of a Railway Superintendent's official life." Mr. Bradford touched only lightly upon the serious side of his subject, but the humorous incidents and reminiscences of official life he related were very interesting and amusing, and much appreciated. At the close the President, Mr. E. A.

Clear, proposed a hearty vote of thanks to Mr. Bradford for his address, and the trouble he had taken, and this was agreed to with acclamation. We devote our "Scrap Heap" (page 663) this week to extracts from Mr. Bradford's address.

L.M.S. Ambulance Finalists.—Out of a total entry of 476 the following nine teams have qualified to compete in the L.M.S.R. final ambulance competition (England and Wales), which will be held at the Midland Grand Hotel, St. Pancras, on Friday, April 27: Knighton, Newcastle (Staffs), Mayfield station (Manchester), Crewe works (Machine shop), Preston (passenger station), Liverpool (District Goods Manager's office), Wolverton Works (Bucks) "A" team, Accrington (motive power shed) and Carlisle (traffic). The prizes will be presented by Mrs. Denis Mackail.

New Aircraft for Plymouth-Liverpool Air Service.—An order has been placed by Railway Air Services Limited for a number of new-type De Havilland Dragon aircraft to be used on a daily air service between Plymouth and Liverpool with intermediate stops at Cardiff, Bristol, and Birmingham. The service will be an extension of that operated by the Great Western Railway on the Plymouth, Cardiff, and Birmingham route last summer. The aircraft are to be powered by two six-cylinder Gipsy engines of 200 h.p. each. Eight passengers will be carried at a cruising speed of 145 m.p.h. Further reference to the orders for new aircraft is made in our Contracts and Tenders column.

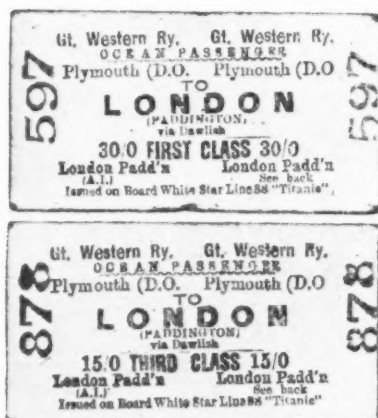
C.P.R. Change of Address.—The offices of the Deputy Secretary and Registrar of the Canadian Pacific Railway at 8, Waterloo Place, S.W.1, will be permanently closed at noon today, April 20. The new offices will be opened on April 23, at 17, Bruton Street, W.1. The change also affects the following companies: Albert Railway & Irrigation Company; Calgary & Edmonton Railway; Dominion Atlantic Railway; Manitoba South Western Colonisation Railway; Minneapolis, St. Paul & Sault Ste. Marie Railway; New Brunswick Railway; Ontario & Quebec Railway; Quebec Central Railway; St. Lawrence & Ottawa Railway; Toronto, Grey & Bruce Railway.

A Notable L.N.E.R. Removal.—Nearly 19 tons of antique furniture were removed from a dealer's shop at Rock Ferry, Cheshire, to his new premises in Huntingdon by the L.M.S.R. and L.N.E.R. on March 21-22. Packing, unpacking and housing the collection in its new home were undertaken by Pickfords Limited. A special train of 11 vehicles carrying the containers was worked by the L.M.S.R. from Rock Ferry to Peterborough, where it was transferred to the L.N.E.R. for the final stage of its journey. Two of the company's latest mechanical horses, with trailers, effected delivery at Huntingdon. The collection left Liverpool at 3.35 p.m. on Wednesday, March 21, and all

delivery arrangements were completed by 1.45 p.m. on Saturday, March 24.

Roller - Bearing Underground Stock.—The Budd Manufacturing Company has under construction a five-car articulated subway train for the Brooklyn-Manhattan Transit Corporation, New York. The train is being equipped with Timken tapered roller bearings on all axles.

Railway Relics of the "Titanic."—Twenty-two years ago last Sunday, while on her maiden voyage across the Atlantic from Southampton to New York, the ss. *Titanic*, then the world's largest ship, sunk at 2.20 in the morning, 2½ hours after striking an iceberg some 350 miles off Cape Race,



Newfoundland. Two relics of the catastrophe that entailed the loss of about 1,500 lives are the Great Western Railway tickets reproduced herewith. Never actually issued, they are of two series, the first issues of which must have gone down with the ill-fated vessel in 1912, specially prepared for issuing on board ship to passengers returning from America who wished to proceed from Plymouth to Paddington by rail.

Improving West Country Traffic, G.W.R.—A £14,000 scheme to improve the working of trains to and from the West of England was announced on Thursday by the Great Western Railway. At a number of points on the main line between Frome and Dawlish, the longer sections between signal-boxes are to be shortened by the provision of additional boxes, a measure of which the full benefit will be felt when the trains are being run in several parts at holiday seasons. The signalling at Westbury and at Cogload junction (near Taunton) is to be improved, and additional passenger train running lines brought into use at Taunton. At Dawlish the up and down main line platforms are to be extended by 150 ft. and 350 ft. respectively, and the main departure platform at Newquay extended from 700 ft. to 1,050 ft. Work on the scheme is to be commenced immediately and will be completed in time for the summer season.

Broadcast of the Merseyside Express.—The arrival of the Merseyside Express (6.5 p.m. from Euston) at Lime Street station, Liverpool, formed part of the programme from North Regional on April 17, by co-operation between the L.M.S.R. and the B.B.C. Microphones were installed on the platform and permanent way to pick up the arrival of the train and incidental sound effects on the platform.

American Streamlined Train.—The high-speed streamlined diesel-electric train, built by the Edward G. Budd Manufacturing Company for the Chicago, Burlington & Quincy Railroad, and described in our *Diesel Railway Traction Supplement* dated August 11 last, has now been completed and is at present undergoing trials. During one of these, a speed of 104 m.p.h. is reported to have been maintained over a distance of several miles.

Irish Railway Wages.—Representatives of the associated Irish railway companies and the railway unions met in Dublin on April 18, to review the situation since the operation of the agreement between the companies and the unions at the end of the strike on the Northern and cross-border lines last year. Under this agreement, members of the N.U.R. and of the A.S.L.E.F. accepted a reduction of 7½ per cent. for the period ending May 1, 1934, and also holidays without pay for the year 1933. Members of the R.C.A. accepted a 10 per cent. reduction up to May 1, 1934, but received holidays with pay during 1933. Later it was agreed that from May 1, 1934, the clerical grades should have their wages increased so that the cut from the date of the agreement until May 1 should be equivalent to 7½ per cent. instead of 10 per cent. These arrangements were subject to a review of the situation before the end of the present month.

G.W.R. Ambulance Presentation at Swindon.—There was a large and enthusiastic gathering at the Queen's Royal Hotel, Swindon, on the evening of April 13, when members of the several Swindon ambulance classes met to receive their awards at the hands of Alderman J. L. Calderwood. Mr. J. Auld (Principal Assistant to the Chief Mechanical Engineer) presided, and the function took the form of a smoking concert provided by the Rascals concert party. The Mayor of Swindon, who traced the history of the St. John Ambulance Association, spoke of the important part played by the railway companies in first-aid work, and made special reference to the alarming number of road accidents. He congratulated the Swindon Division on its progress, and on the fine work it was doing. Mr. Auld paid tribute to the excellent first-aid rendered in the works. It was stated that there had been a considerable increase in the number of successful examinations at Swindon during the past year, the total number being 330.

Questions in Parliament

Railway Commission Abolition

Sir E. Henderson on April 12 asked the Attorney General whether it was intended to reintroduce the Railway and Canal Commission Abolition Bill this session.

Sir T. Inskip.—It does not appear that there is any prospect, in the present state of opinion on the subject, of obtaining general agreement, and having regard to the pressure on Parliamentary time, the Government do not think that it will be possible to pass any Bill on this subject unless it is wholly uncontroversial. In these circumstances it is not considered worth while.

Railway Employees' Pensions

Sir Wilfrid Sugden on April 17 asked the Minister of Health what numbers of men were compulsorily retired from their employment by the various railway companies in Great Britain at 65 years of age on their receipt of old age pensions; and what arrangement existed between his department and the Ministry of Labour as to future employment.

Sir Hilton Young.—As regards the first part of the question, an old age pension at age 65 is payable whether or not the recipient continues at work after that age, and I have therefore no information with regard to the number of railway employees compulsorily retired on receipt of their old age pensions. As regards the second part of the question, employees of railway companies are in this matter in no different position from that of other insured persons.

Parliamentary Notes

Electricity (Supply) Bill

This Bill, promoted by the Government, received a second reading in the House of Lords on April 12. As explained by the Earl of Plymouth, Under Secretary for the Colonies, the object of the measure is to remove some uncertainties under existing legislation. The section of it of particular interest to railway companies is clause 4. This, Lord Plymouth said, gave effect to a recommendation by Lord Weir's Committee on main line railway electrification. It would enable the Central Electricity Board to give supplies for traction services to railway companies direct from the National grid system. Hitherto a railway company desiring to obtain a supply from the grid system must do so through the authorised undertaker. For the electrification of any great length of railway line, it would be necessary for the railway company to negotiate contracts for separate supplies from the undertakers at each of the proposed points of supply. Under clause 4 of this Bill the Central Board and the railway companies would be in a position to enter into direct negotiations.

British and Irish Railway Traffic Returns

| GREAT BRITAIN | Totals for 15th Week | | | Totals to Date | | |
|---------------------------------------|----------------------|-----------|--------------|----------------|------------|--------------|
| | 1934 | 1933 | Inc. or Dec. | 1934 | 1933 | Inc. or Dec. |
| L.M.S.R. (6,941½ mls.) | £ | £ | £ | £ | £ | £ |
| Passenger-train traffic... | 396,000 | 615,000 | - 219,000 | 5,829,000 | 5,762,000 | + 67,000 |
| Merchandise, &c. ... | 465,000 | 370,000 | + 95,000 | 6,579,000 | 5,968,000 | + 611,000 |
| Coal and coke ... | 258,000 | 192,000 | + 66,000 | 3,953,000 | 3,766,000 | + 187,000 |
| Goods-train traffic ... | 723,000 | 562,000 | + 161,000 | 10,532,000 | 9,734,000 | + 798,000 |
| Total receipts ... | 1,119,000 | 1,177,000 | - 58,000 | 16,361,000 | 15,496,000 | + 865,000 |
| L.N.E.R. (6,339 mls.) | | | | | | |
| Passenger-train traffic... | 269,000 | 361,000 | - 92,000 | 3,796,000 | 3,750,000 | + 46,000 |
| Merchandise, &c. ... | 300,000 | 255,000 | + 45,000 | 4,703,000 | 4,122,000 | + 581,000 |
| Coal and coke ... | 256,000 | 177,000 | + 79,000 | 3,702,000 | 3,363,000 | + 339,000 |
| Goods-train traffic ... | 556,000 | 432,000 | + 124,000 | 8,405,000 | 7,485,000 | + 920,000 |
| Total receipts ... | 825,000 | 793,000 | + 32,000 | 12,201,000 | 11,235,000 | + 966,000 |
| G.W.R. (3,750 mls.) | | | | | | |
| Passenger-train traffic... | 171,000 | 255,000 | - 84,000 | 2,440,000 | 2,435,000 | + 5,000 |
| Merchandise, &c. ... | 171,000 | 152,400 | + 18,600 | 2,624,000 | 2,383,000 | + 241,000 |
| Coal and coke ... | 109,000 | 94,000 | + 15,000 | 1,631,000 | 1,606,000 | + 25,000 |
| Goods-train traffic ... | 302,000 | 246,000 | + 56,000 | 4,255,000 | 3,989,000 | + 266,000 |
| Total receipts ... | 473,000 | 501,000 | - 28,000 | 6,695,000 | 6,424,000 | + 271,000 |
| S.R. (2,177 mls.) | | | | | | |
| Passenger-train traffic... | 252,000 | 377,000 | - 125,000 | 3,663,000 | 3,596,000 | + 67,000 |
| Merchandise, &c. ... | 64,000 | 54,000 | + 10,000 | 893,000 | 858,500 | + 34,500 |
| Coal and coke ... | 32,000 | 22,000 | + 10,000 | 535,000 | 502,500 | + 32,500 |
| Goods-train traffic ... | 96,000 | 76,000 | + 20,000 | 1,428,000 | 1,361,000 | + 67,000 |
| Total receipts ... | 348,000 | 453,000 | - 105,000 | 5,991,000 | 4,957,000 | + 1,034,000 |
| Liverpool Overhead ... | 1,006 | 1,076 | - 70 | 16,138 | 15,577 | + 561 |
| (6½ mls.) | | | | | | |
| Mersey (4½ mls.) ... | 4,115 | 4,223 | - 108 | 63,520 | 59,808 | + 3,712 |
| *London Passenger Transport Board ... | 523,400 | — | — | 20,499,900 | — | — |
| IRELAND | | | | | | |
| Belfast & C.D. pass. (80 mls.) | 1,808 | 1,945 | - 137 | 27,684 | 26,044 | + 1,640 |
| " " goods | 629 | 567 | + 62 | 8,073 | 7,831 | + 242 |
| " " total | 2,437 | 2,512 | - 75 | 35,757 | 33,875 | + 1,882 |
| †Great Northern pass. (562 mls.) | 7,600 | 3,800 | + 3,800 | 113,650 | 47,900 | + 65,750 |
| " " goods | 8,500 | 3,500 | + 5,000 | 122,250 | 47,450 | + 74,800 |
| " " total | 16,100 | 7,300 | + 8,800 | 235,900 | 95,350 | + 140,550 |
| Great Southern pass. (2,168 mls.) | 19,077 | 17,754 | + 1,323 | 288,648 | 271,328 | + 17,320 |
| " " goods | 33,549 | 25,574 | + 7,975 | 477,696 | 463,545 | + 14,151 |
| " " total | 52,626 | 43,328 | + 9,298 | 766,344 | 734,873 | + 31,471 |

N.B.—Good Friday Week, 1933. † Strike, 1933. * 41st Week.

Railway and Other Reports

Babcock & Wilcox Limited.—The directors recommend a final dividend of 3 per cent., less tax, making 6 per cent. for the year. This compares with 7½ per cent., less tax, for the previous 12 months.

Madras & Southern Mahratta Railway.—The directors have declared an interim dividend for the half year ending June 30, 1934, payable July 2, 1934, of £4 10s. per cent., viz.:—guaranteed interest £1 15s.; stockholders' revenue account £2 15s. This is an increase of 10s. per cent. compared with last year's interim dividend.

English Electric Co. Ltd.—There was a loss on trading in 1933 of £175,681, against a trading profit of £106,196 in 1932. After deducting debenture interest, &c., the total loss for the year comes to £267,837, against a loss in 1932 of £11,908, and the debit balance carried forward is increased from £9,433 to £277,270. No provision has been made in 1933 for depreciation because the buildings, plant, and machinery

have been maintained in first-class condition out of revenue.

G. D. Peters & Co. Ltd.—A further net loss amounting to £53,272 is reported for 1933. A transfer of £50,000 is made from reserve (against £40,000 last year), while credits arise of £2,987 for income-tax reserve not required and £2,500 from reserve re subsidiaries not required. After extinguishing the year's loss, the balance forward is increased from £1,452 to £3,667.

Forthcoming Events

- Apr. 21 (Sat.).—Stephenson Locomotive Society. Visit to Oxford and Didcot Running Sheds, G.W.R.
 Apr. 23 (Mon.).—Railway Benevolent Institution, in Board Room, Railway Clearing House, Seymour Street, London, N.W.1, 4.45 p.m. Special Meeting of Subscribers.
 Apr. 25 (Wed.).—Institute of Fuel, at Inst. of Mechanical Engineers, Storey's Gate, London, S.W.1, 6 p.m. "The Velox Steam Generator; a Super-Charged Boiler," by Mr. A. Meyer.
 Apr. 27 (Fri.).—Railway Students' Association (Edinburgh), 7.30 p.m. Annual General Meeting.

British and Irish Railway Stocks and Shares

| Stocks | Highest 1933 | Lowest 1933 | Prices | |
|----------------------------|--------------------|----------------|-----------------|--------------|
| | | | Apr. 18 1934 | Rise Fall |
| G.W.R. | | | | |
| Cons. Ord. | 55½ | 31 | 58 | +1 |
| 5% Con. Prefce. | 109¾ | 69½ | 110½ | — |
| 5% Red. Pref. (1950) .. | 109½ | 87½ | 109½ | — |
| 4% Deb. | 108½ ¹⁶ | 99½ | 108½ | -½ |
| 4½% Deb. | 108 | 100¾ | 110½ | — |
| 4½% Deb. | 116 | 106 | 117½ | — |
| 5% Deb. | 128 | 117½ | 128½ | — |
| 2½% Deb. | 65 | 60 | 69½ | +1 |
| 24% Rt. Charge | 124 | 111½ | 126½ | — |
| 5% Cons. Guar. | 122 | 103 | 123½ | — |
| L.M.S.R. | | | | |
| Ord. | 297½ | 12½ | 27 | +½ |
| 4% Prefce. (1923) | 51 | 17 | 57 | +1 |
| 4% Prefce. | 72 | 33½ | 79 | -½ |
| 5% Red. Prf. (1955) .. | 93 | 47½ | 99 | — |
| 4% Deb. | 103½ | 89½ | 103 | -½ |
| 5% Red. Deb. (1952) .. | 114 | 105 | 113½ | — |
| 4% Guar. | 97½ | 68½ | 98½ | — |
| L.N.E.R. | | | | |
| 5% Pref. Ord. | 22½ | 7¾ | 20 | +½ |
| Def. Ord. | 10¾ | 4½ | 10 | +½ |
| 4% First Prefce. | 65½ | 19½ | 67 | — |
| 4% Second Prefc. | 40½ | 12½ | 39 | — |
| 5% Red. Pref. (1955) .. | 83¾ | 27 | 87 | -½ |
| 4% First Guar. | 94¾ | 58½ | 95½ | — |
| 4% Second Guar. | 89½ | 48 | 90 | -½ |
| 3% Deb. | 77 | 60½ | 78½ | -½ |
| 4% Deb. | 102¾ | 80 | 102½ | -½ |
| 5% Red. Deb. (1947) .. | 112 | 102½ | 108½* | — |
| 4½% Sinking Fund Red. Deb. | 107½ | 98¾ | 106½ | — |
| SOUTHERN | | | | |
| Pref. Ord. | 71 | 27¾ | 79 | — |
| Def. Ord. | 24½ | 9½ | 28 | +½ |
| 5% Prefce. | 107½ ¹⁶ | 74 | 110½ | — |
| 5% Red. Pref. (1964) .. | 107¾ | 78¾ | 111½ | — |
| 5% Guar. Prefce. | 124½ | 102¾ | 124½ | — |
| 5% Red. Guar. Pref. (1957) | 115½ | 103½ | 114½ | — |
| 4% Deb. | 107½ | 96¾ | 105½ | — |
| 5% Deb. | 126½ | 114½ | 126½ | — |
| 4% Red. Deb. | 107½ | 100 | 106½ | — |
| 1962-67 | | | | |
| BELFAST & C.D. | | | | |
| Ord. | 6 | 4 | 5 | — |
| FORTH BRIDGE | | | | |
| 4% Deb. | 99½ | 95½ | 101½ | — |
| 4% Guar. | 98½ | 94 | 101½ | — |
| G. NORTHERN (IRELAND) | | | | |
| Ord. | 7½ | 3½ | 5 | — |
| G. SOUTHERN (IRELAND) | | | | |
| Ord. | 28 | 16 | 20 | — |
| Prefce. | 24 | 12½ | 19 | — |
| Guar. | 42 | 16¾ | 46½ | — |
| Deb. | 60 | 30½ | 64½ | — |
| L.P.T.B. | | | | |
| 4½% "A" | 117½ | 112 | 118½ | — |
| 5% "A" | 127½ | 119½ | 128 | +1 |
| 4½% "T.F.A." | 111½ | 106 | 109½ | — |
| 5% "B" | 122½ | 114 | 120½ | — |
| 5% "C" | 86¾ | 74½ | 79½ | +1 |
| MERSEY | | | | |
| Ord. | 16½ | 5 | 13 | — |
| 4% Perp. Deb. | 83 | 63¾ | 87½ | +1 |
| 3% Perp. Deb. | 62 | 51 | 65½ | — |
| 3% Perp. Prefce. | 50½ | 27 | 53½ | +2 |

* ex-dividend.

CONTRACTS AND TENDERS

W. Black & Son Limited has secured an order from the L.N.E.R. for 10,000 Scots fir sleepers.

R. & W. Hawthorn Leslie & Co. Ltd. has secured an order from the United Railways of the Havana for four mild-steel inner fireboxes.

P. & W. MacLellan Limited has secured an order from the Nyasaland Railways for a 60-ft. clear span steel plate girder deck span.

Leyland Motors Limited has recently received an order from Southdown Motor Services Limited for six oil-engined Titan and three Tiger omnibuses.

The Parkgate Iron & Steel Co. Ltd. has placed orders for a total of 200 12-ton wagons, divided equally between S. J. Clave Limited and the Central Wagon Company.

The Delaware, Lackawanna & Western Railroad has issued an inquiry for 20 4-8-4 type locomotives. Timken tapered roller bearings are specified on all axles.

The Metropolitan-Cammell Carriage, Wagon & Finance Co. Ltd. has secured an order from the Nigerian Government Railway for six bogie third class steel coaches.

N.V. Montan Export, The Hague, has secured an order from the Egyptian State Railways Administration for 450 carriage and wagon tyres (Ref. No. E.S.R. 21/104, adjudication of March 1) at total cost of £2,368 2s. 6d., for delivery f.o.b. Trieste.

The Danish State Railways Administration has granted a contract to British firms for a supply of coal for six months to the amount of 125,000 tons. A Reuters Copenhagen message states that this is not an isolated purchase, but an outcome of Danish policy, which is to secure a continual balance of her trade with Britain.

Railway Aircraft Orders

De Havilland Aircraft Co. Ltd. has received an order from Railway Air Services Limited for three De Havilland-Dragon Six aircraft for a service between Plymouth and Liverpool with intermediate stops at Cardiff, Bristol, and Birmingham. Each of these machines will be fitted with two 200-h.p. six-cylinder Gipsy engines and will have a cruising speed of 145 m.p.h. Accommodation will be provided in each for eight passengers.

De Havilland Aircraft Co. Ltd. has received an order from Imperial Airways Limited for six De Havilland express air liners, each to be fitted with four 200-h.p. engines. These machines are to be used on routes of Railway Air Services Limited and Imperial Airways Limited other than those over the Great Western area, to which

the order in the previous paragraph refers.

The directors of the Belgian National Railways Company have ordered 15 4-cylinder simple Pacific express locomotives and tenders from Belgian firms.

D. Wickham & Co. Ltd. has secured an order from the Uruguay Northern Railway for one gang trolley and one trailer.

The Mercury Truck & Tractor Company has received an order for one model 11a Mercury petrol platform truck from the Buenos Ayres Western Railway.

Machine Tools for South America

Edward G. Herbert Limited has received an order for one hacksaw machine and one heavy-duty hacksaw from the Buenos Ayres Great Southern Railway.

The Churchill Machine Tool Co. Ltd. has received an order from the Buenos Ayres Western Railway for a plain grinding machine, Model C.B., and a piston ring surface grinder.

Kitchen & Wade Limited has received an order from the Buenos Ayres Great Southern Railway for one centralised control 4-ft. radial drilling, boring, tapping, and studding machine.

Craven Bros. (Manchester) Limited has secured an order for a locomotive crankpin grinding and quaterning machine and a universal milling machine from the Buenos Ayres Western Railway.

A hundred and fifty new locomotives are to be built for the four principal Spanish railway companies at a cost of £1,577,143, according to plans approved by the Superior Railway Council, states a Reuters message from Madrid. The estimates were originally prepared during the regime of the Azana Cabinet, and were exactly double the present sum. New metal bridges are also to be constructed for the same companies at a total cost of £2,102,857. The Federation

of National Industries has elaborated plans for this expenditure on the railways primarily in order to relieve unemployment in the metal and allied industries. It is estimated that 64,500 tons of metal will be used.

The Associated Equipment Co. Ltd. has received an order from David MacBrayne (1928) Limited for an oil-engined Regal single-decked passenger vehicle.

Indian Orders

Taylor Bros. & Co. Ltd. has secured an order from the South Indian Railway for 564 pairs of Indian standard broad-gauge disc wheels and axles complete.

Shaw Wallace & Co. has secured an order from the Burma Railways for 260 tons of mild steel dog-spikes for 60-lb. rails at a total price of Rs. 32,560-15-0.

Hurst Nelson & Co. Ltd. has received an order from the Jodhpur Railway for six bogie carriage underframes to the inspection of the consulting engineers, Messrs. Rendel, Palmer & Tritton.

The Bombay, Baroda & Central India Railway invites tenders receivable by May 2, at the White Mansion, 91, Petty France, Westminster, S.W.1, for copper firebox plates, cast-steel wheel centres, and steel material comprising angles, channels, tees, plates and sheets.

The D.P. Battery Co. Ltd. is supplying a Kathanode locomotive type battery for fitting by the English Electric Co. Ltd. to a standard gauge battery-operated shunting locomotive under construction by the English Electric Company for the Dundee Corporation Electricity Department. The battery is of similar design to the Kathanode batteries fitted on locomotives belonging to the War Office, Air Ministry, railways and municipal undertakings.

King Fuad of Egypt has issued his first royal warrant of appointment and the recipient is a British firm, the Dunlop Rubber Co. Ltd. King Fuad is a keen motorist and his Rolls Royce cars are all fitted with Dunlop tyres.

Exports of Railway Material from the United Kingdom in March

| | Three Months Ending | | Mar., 1934 | | Mar., 1933 | |
|--|---------------------|------------|------------|------------|------------|------------|
| | Mar., 1934 | Mar., 1933 | Mar., 1934 | Mar., 1933 | Mar., 1934 | Mar., 1933 |
| Locomotives, rail | £ | £ | £ | £ | £ | £ |
| Carriages and wagons | 26,840 | 28,256 | 86,355 | 203,019 | | |
| Rails, steel | 68,078 | 42,511 | 171,140 | 143,127 | | |
| Wheels, sleepers, fishplates and miscellaneous materials | 39,709 | 11,682 | 118,460 | 46,644 | | |
| | 59,489 | 64,074 | 174,685 | 150,018 | | |
| Locomotive and rail exports included the following :- | | | | | | |
| | Locomotives | | Rails | | | |
| | Mar., 1934 | Mar., 1933 | Mar., 1934 | Mar., 1933 | | |
| Argentina | £ | £ | £ | £ | | |
| Union of South Africa | — | — | 4,481 | 1,568 | | |
| British India | 11,280 | 16,492 | 8,007 | 1,411 | | |
| | | | 11,704 | 672 | | |

OFFICIAL NOTICES

THE MADRAS & SOUTHERN MAHRATTA RAILWAY CO. LTD. invite Tenders for:—
640 Pairs WHEELS and AXLES for WAGONS
(619 Pairs Broad Gauge and 30 Pairs Metre Gauge).

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fee ONE GUINEA, which will not be returned.
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39th Annual Edition, 1933-34.

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OFFICIAL ADVERTISEMENTS

OFFICIAL ADVERTISEMENTS intended for insertion on this page should be sent in as early in the week as possible. The latest time for receiving official advertisements for this page for the current week's issue is noon on Thursday. All advertisements should be addressed to:—*The Railway Gazette*, 33, Tothill Street, Westminster, London, S.W.1.

Sir Harry McGowan on Trade Prospects

Abstract of the Chairman's speech at the annual meeting of Imperial Chemical Industries Limited yesterday

The year 1933 was defined by Sir Harry McGowan as one of moderate but general recovery in which the improvement had been more marked in respect of internal than external trade. In fact during 1933 as a whole British exports remained almost stationary though there were welcome indications of a slight improvement in the second half of the year. There was also the President of the Board of Trade's assurance that during 1933 Great Britain had a better record in manufactured exports than any other country.

The Outlook

Sir Harry hoped to see in the home market an extension of the present rate of new capital expenditure, partly through the relaxation of existing restrictions by public authorities, partly through the development of slum clearance, and partly through the greater confidence now evident in industrial circles. Though much had been achieved by the National Government in leading the country through trying times in the past two years, many tasks remained. No steps could be too bold or vigorous for the present temper of the people. The better organisation of some of our basic industries, the problems of the distressed areas and the energetic execution of the new housing problem were examples.

He did not expect improvement abroad to be either as rapid or as widespread as at home. Our hopes overseas must rest on the accumulative results of commercial agreements between countries interested in world trade and on the secondary effect of greater activity in the internal trade of different countries. Nevertheless he looked forward with confidence to another year of gradual development.

Sir Harry gave interesting details of developments in the home market. I.C.I. was in the fortunate position of manufacturing many of the necessary raw materials for the plastic industry, and in the belief that there is much knowledge yet to be gained in this field were pressing forward an extensive research programme from which it was anticipated new products of great interest and attraction would result. Some of these would create new de-

mands, and others would replace existing materials.

Last summer the demand for Drikold (solid carbon-dioxide) so far exceeded expectation as to quadruple sales. To meet further requirements additional plant was being laid down. A company had been formed to co-ordinate the activities of world interests in this commodity outside the U.S.A.

Sir Harry suggested that the remedy for Japanese competition could be found in the words efficiency, organisation, currency stabilisation and co-operation. On the question of depreciated currencies, industrialists hoped that their Government would spare no effort to secure conditions that would permit of an early stabilisation of the exchanges. The more permanent problem of Japanese competition ought to be solved through measures of co-operation with Japanese producers. The leaders of British and Japanese industry must talk more and more with one another. Every personal contact held a promise for the future.

Sir Harry paid a warm tribute to the striking recovery of Australia, as a result of which business throughout the Commonwealth showed considerable improvement. Though the Canadian economic situation was adversely affected in the early part of the year by conditions in the U.S.A., there was a general improvement later and Canada to-day was on the up-grade. Similarly South Africa had had another satisfactory year and sales of explosives and fertilisers had increased.

The Fruits of Research

Material advances had been made during the year in improving the company's research facilities.

Sir Harry referred to the Council for Research on Housing Construction, whose report might be expected in the near future. He was convinced that building products were destined to come more and more under the influence of chemical research. I.C.I. was preparing to market a plaster board. He then mentioned some of the new products placed on the market during 1933. Sodium aluminate for water softening was being made in considerable quantity and engineering research

had resulted in the development of an ammonia cracker and an ammonia burner which were promoting the sale of ammonia as a source of industrial gases.

Oil from Coal

Sir Harry made an important announcement on the subject of the production of oil from coal. This was a subject that had been mentioned at almost every annual meeting of I.C.I. since its inception. A plant designed to produce 100,000 tons per annum by the hydrogenation of bituminous coal and capable of treating in addition certain quantities of high or low temperature tar was now in process of establishment. I.C.I.'s activities in this new field might be divided into technical research, production and marketing, and Government relations.

The hydrogenation of coal represented a remarkable development in high-pressure synthesis. The full development of the process from laboratory to commercial manufacture had involved costly research extending over a period of more than seven years, during which time I.C.I. had spent over £1,000,000.

The patent field also offered difficulties which were cleared away by the formation of the International Hydrogenation Patents Company, which was a brilliant instance of a co-operation of world interests designed to secure the orderly development of a new industry with a great future. By it a definite market in the U.K. was assured for petrol made by I.C.I., who would not be concerned with distribution. Once made, the petrol would be handed over in bulk to nominated oil distributing companies who would pay I.C.I. the net average market price.

The capital expenditure of I.C.I. on the plant would exceed £2,500,000, which would be provided out of present liquid resources. In addition, plant at present unoccupied would be brought into use. Construction work began last autumn and the value of expenditure and orders placed up to March 31 last was £1,600,000. Approximately 1,850 men were engaged on the work under some 200 managers, engineers, chemists and others, not counting about 550 men employed on the site by contractors. The total employment, direct and indirect, afforded at the moment was estimated at 13,600 men.

Sir Harry expected production would begin before the end of the year.

Railway Share Market

The stock and share markets have substantially benefited, as far as concerns an increase on marketable value if not in new business, from the proposed reduction of 6d. in the income tax contained in the Budget. This alleviation of tax is equivalent to $2\frac{1}{2}$ per cent. on invested capital and necessarily makes a substantial difference when calculated in terms of market value of an investment. A 5 per cent. home railway stock, for example, standing at par becomes worth $102\frac{1}{2}$ on the basis of net yield, and a corresponding revaluation of those stocks bearing a fixed rate of interest has, therefore, been taking place throughout the market, including prior charge stocks of home railways.

The movement has extended to preference stocks of home railways, notwithstanding many of these stocks are not

paying their full rate of fixed dividend. Appreciation in these stocks is based on the strong hint given by the Chancellor of the Exchequer that he has in mind the possibility of a further big surplus next April. Purchasers of preference stocks are, therefore, taking advantage of present low prices to capitalise the prospect of a further 6d. off the income tax next spring, by which time there is also a possibility of the railways being in a position to resume payment of the full rate of dividends to which the stocks are entitled. Much the same argument is used in purchasing Great Western ordinary stock, which is regarded almost as a 3 per cent. minimum stock on account of the declared policy of the directors of maintaining the status of the stock in the trustee list. Discussion over the question of wages of the railwaymen led, as was anticipated, to a partial drying-up of activity in home railway stocks, but it is anticipated there will be a re-

newal of activity now that evidence is increasing that industry is making a rapid recovery. On this ground there has been further buying of London & North Eastern stocks. One of the chief movements was in a minor stock, Mersey 3 per cent. preference being marked up two points, with dealings taking place at 53, which is double the price ruling at one time last year.

It is anomalous that Mersey 3 per cent. perpetual debenture stands at only 65½, at which the yield is £4 11s. 7d. per cent., or only 1s. 7d. per cent. less than the return on the preference. This may be regarded as a small concession to make for the superior security of a debenture stock. Argentine railway stocks have not benefited to the degree that might have been expected from the proposed committee on the railway situation. Central Argentine 4 per cent. debenture moved up to 68½, but the 5 per cent. debenture was a half point lower.

Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

| Railways | Miles open 1933-34 | Week Ending | Traffic for Week | | No. of Week | Aggregate Traffic to Date | | | Shares or Stock | Prices | | | | | | |
|--------------------------|-------------------------------|----------------|---------------------|---------------------------------------|-------------|---------------------------|-----------|-------------------------|--------------------|-----------------|----------------|----------------------|----------------------|------|------|-----|
| | | | Total this year | Inc. or Dec. compared with 1933 | | Totals | | Increase or Decrease | | Highest 1933 | Lowest 1933 | 18. Apr., 1934 | % Yield (Note) | | | |
| | | | | | | This Year | Last Year | | | | | | | | | |
| South & Central America. | Antofagasta (Chili) & Bolivia | 830 | 15.4.34 | 16,310 | + | 8,590 | 15 | 194,920 | 138,030 | + | 56,890 | Ord. Stk. | 26 | 115½ | 25 | Nil |
| | Argentine North Eastern... | 753 | 14.4.34 | 11,400 | + | 2,100 | 41 | 418,100 | 438,500 | — | 20,400 | — | 141½ | 5 | 50 | 8 |
| | Argentine Transandine... | 111 | — | — | — | — | — | — | — | — | — | A. Deb. | 55 | 40 | 50 | 8 |
| | Bolivar | 170 | Mar., 1934 | 7,700 | — | 950 | 13 | 20,650 | 23,850 | — | 3,200 | 6 p.c. Db. | 10 | 5 | 10 | Nil |
| | Brazil | — | — | — | — | — | — | — | — | — | — | Bonds. | 15 | 11 | 13 | 3½ |
| | Buenos Ayres & Pacific .. | 2,806 | 14.4.34 | 148,000 | + | 14,000 | 41 | 4,421,000 | 4,495,000 | — | 74,000 | Ord. Stk. | 26 | 97½ | 13½ | Nil |
| | Buenos Ayres Central .. | 190 | 8.4.34 | 8,119 | — | 1,065 | 41 | 384,734 | 371,009 | + | 13,725 | Mt. Db. | 30 | 10 | 23 | Nil |
| | Buenos Ayres Gt. Southern | 5,085 | 14.4.34 | 212,000 | + | 8,000 | 41 | 8,331,000 | 8,326,000 | — | 5,000 | Ord. Stk. | 44½ | 21½ | 30 | Nil |
| | Buenos Ayres Western .. | 1,926 | 14.4.34 | 95,000 | + | 25,000 | 41 | 2,735,000 | 2,762,000 | — | 27,000 | — | 34½ | 15½ | 23 | Nil |
| | Central Argentine | 3,700 | 14.4.34 | 176,000 | + | 16,000 | 41 | 6,790,000 | 7,449,000 | — | 659,000 | — | 28½ | 10 | 12½ | Nil |
| | Do. | — | — | — | — | — | — | — | — | — | — | Divd. | 18 | 10 | 12½ | Nil |
| | Cent. Uruguay of M. Video | 273 | 14.4.34 | 18,246 | + | 6,268 | 41 | 675,955 | 623,792 | + | 52,163 | Ord. Stk. | 20 | 8 | 15 | Nil |
| | Do. Eastern Extn. | 311 | 14.4.34 | 4,270 | + | 1,519 | 41 | 136,875 | 134,679 | + | 2,196 | — | — | — | — | — |
| | Do. Northern Extn. | 185 | 14.4.34 | 2,709 | + | 1,186 | 41 | 75,951 | 79,636 | — | 3,685 | — | — | — | — | — |
| | Do. Western Extn. | 211 | 14.4.34 | 1,289 | + | 244 | 41 | 67,207 | 65,653 | + | 11,554 | — | — | — | — | — |
| | Cordoba Central | 1,218 | 14.4.34 | 37,000 | + | 10,000 | 41 | 1,677,000 | 1,655,000 | + | 22,000 | Ord. Inc. | 9½ | 2½ | 5 | Nil |
| | Costa Rica | 188 | Nov., 1933 | 18,534 | — | 3,185 | 21 | 99,724 | 107,788 | — | 8,064 | — | 29 | 20 | 26 | 7½ |
| | Dorada | 70 | Mar., 1934 | 9,500 | + | 3,500 | 13 | 31,500 | 19,600 | + | 11,900 | 1 Mt. Db. | 76½ | 68½ | 95 | 6½ |
| | Entre Rios | 810 | 14.4.34 | 13,600 | + | 3,000 | 41 | 636,400 | 617,900 | + | 18,500 | Ord. Stk. | 26½ | 9 | 17½ | Nil |
| | Great Western of Brazil .. | 1,082 | 14.4.34 | 7,700 | + | 1,100 | 15 | 144,900 | 202,000 | — | 57,100 | Ord. Sh. | 23½ | 2 | 12½ | Nil |
| | International of Cl. Amer. | 794 | Feb., 1934 | \$509,640 | + | \$74,295 | 8 | \$970,373 | \$865,255 | + | \$105,118 | — | — | — | — | — |
| Canada. | Interoceanic of Mexico .. | — | — | — | — | — | — | — | — | — | — | 1st Pref. | 1½ | 1½ | 1½ | Nil |
| | La Guaira & Caracas .. | 22½ | Mar., 1934 | 3,700 | — | 4,425 | 13 | 11,280 | 21,365 | — | 10,085 | Stk. | 16 | 10 | 10½ | Nil |
| | Leopoldina | 1,918 | 14.4.34 | 20,039 | + | 1,181 | 15 | 347,987 | 374,047 | — | 26,160 | Ord. Stk. | 20½ | 10 | 11 | Nil |
| | Mexican | 483 | 14.4.34 | \$249,200 | + | \$4,900 | 15 | \$3,376,300 | \$2,782,200 | + | \$594,100 | — | 3 | 1½ | 3 | Nil |
| | Midland of Uruguay | 319 | Mar., 1934 | 9,523 | + | 409 | 39 | 87,516 | 77,061 | + | 10,455 | Ord. Stk. | 2 | 1 | 1½ | Nil |
| | Nitrate | 411 | 15.4.34 | 12,324 | + | 8,172 | 15 | 98,616 | 29,911 | + | 68,705 | Ord. Sh. | 78½ | 11½ | 3½ | Nil |
| | Paraguay Central | 274 | 7.4.34 | 3,610 | + | 520 | 40 | 128,530 | 108,410 | + | 20,120 | Pr. Li. Db. | 72 | 49½ | 71 | 8½ |
| | Peruvian Corporation .. | 1,059 | Mar., 1934 | 66,977 | + | 22,000 | 39 | 506,929 | 485,536 | + | 21,393 | Pref. | 15½ | 5 | 13½ | Nil |
| | Salvador | 100 | 14.4.34 | 2,086 | — | 306 | 42 | 60,450 | 120,242 | — | 59,792 | Pr. Li. Db. | 70 | 66½ | 70 | 7½ |
| | San Paulo | 153½ | 8.4.34 | 32,240 | — | 12,288 | 14 | 408,025 | 434,309 | — | 26,284 | Ord. Stk. | 102 | 68 | 80 | 2½ |
| | Taltal | 164 | Mar., 1934 | 10,565 | + | 4,795 | 39 | 56,780 | 33,985 | + | 22,795 | Ord. Sh. | 14 | 34 | 16 | 6½ |
| | United of Havana | 1,365 | 14.4.34 | 38,630 | + | 9,359 | 41 | 782,120 | 799,739 | — | 17,619 | Ord. Stk. | 8 | 2 | 5 | Nil |
| | Uruguay Northern | 73 | Mar., 1934 | 1,155 | + | 92 | 39 | 10,546 | 13,693 | — | 3,147 | Deb. Stk. | 6 | 3½ | 5 | Nil |
| India. | Canadian National | 23,750 | 14.4.34 | 614,804 | + | 114,362 | 15 | 8,745,967 | 7,122,663 | + | 1,623,304 | — | — | — | — | — |
| | Canadian Northern | — | — | — | — | — | — | — | — | — | — | Perp. Dbs. | 60½ | 38 | 68 | 5½ |
| | Grand Trunk | — | — | — | — | — | — | — | — | — | — | 4 p.c. Gar. | 98½ | 85 | 100½ | 4 |
| | Canadian Pacific | 17,018 | 14.4.34 | 432,600 | + | 80,600 | 15 | 6,365,000 | 5,435,000 | + | 930,000 | Ord. Stk. | 22½ | 11 | 16 | Nil |
| Various. | Assam Bengal | 1,329 | 17.3.34 | 30,870 | + | 7,918 | 50 | 1,227,100 | 1,212,809 | + | 14,291 | Ord. Stk. | 79 | 70 | 77½ | 3½ |
| | Barsi Light | 202 | 24.3.34 | 3,225 | + | 128 | 51 | 145,470 | 140,175 | + | 5,295 | Ord. Sh. | 101½ | 70 | 101½ | 5½ |
| | Bengal & North Western .. | 2,113 | 24.3.34 | 52,618 | + | 3,204 | 30 | 1,176,053 | 1,212,642 | — | 36,589 | Ord. Stk. | 292 | 240 | 273 | 5½ |
| | Bengal Doonars & Extension | 161 | 24.3.34 | 2,694 | + | 1,020 | 51 | 148,073 | 144,411 | + | 3,662 | — | 127 | 119 | 125½ | 5½ |
| | Bengal-Nagpur | 3,269 | 17.3.34 | 105,900 | — | 282 | 50 | 5,411,505 | 4,959,031 | + | 452,474 | — | 97½ | 83½ | 101½ | 5½ |
| | Bombay, Baroda & Cl. India | 3,089 | 7.4.34 | 170,100 | + | 5,025 | 1 | 170,100 | 165,075 | + | 5,025 | — | 112 | 107 | 111½ | 5½ |
| | Madras & South'n Mahratta | 3,230 | 17.3.34 | 121,800 | + | 65 | 50 | 5,477,290 | 5,286,555 | + | 190,735 | — | 127 | 114½ | 124½ | 7½ |
| | Rohilkund & Kumaon | 572 | 24.3.34 | 13,459 | + | 536 | 30 | 255,528 | 239,891 | + | 15,637 | — | 260 | 225 | 251 | 6 |
| | South India | 2,526 | 17.3.34 | 75,106 | — | 6,962 | 50 | 3,871,749 | 3,975,767 | — | 104,018 | — | 119½ | 112 | 117½ | 6½ |
| | Beira-Umtali | 204 | Feb., 1934 | 47,001 | + | 10,100 | 21 | 241,467 | 191,476 | + | 49,991 | — | — | — | — | — |
| Various. | Bilbao River & Cantabrian | 15 | Mar., 1934 | 2,719 | + | 1,180 | 13 | 5,962 | 3,532 | + | 2,430 | — | — | — | — | — |
| | Egyptian Delta | 621 | 31.3.34 | 5,895 | + | 267 | 52 | 235,876 | 256,379 | — | 20,503 | Pr. Sh. | 15½ | 3 | 5 | Nil |
| | Great Southern of Spain .. | 104 | 31.3.34 | 1,413 | + | 400 | 13 | 27,410 | 28,482 | — | 1,072 | Inc. Deb. | 4 | 3 | 5½ | Nil |
| | Kenya & Uganda | 1,625 | Aug., 1933 | 159,746 | + | 12,456 | 35 | 1,523,550 | 1,273,216 | + | 250,334 | — | — | — | — | — |
| | Manila | 913 | Feb., 1934 | 82,002 | + | 22,400 | 21 | 441,733 | 295,532 | + | 146,201 | B. Deb. | 53 | 33½ | 43½ | 8½ |
| | Mashonaland | 277 | Feb., 1934 | 12,965 | + | 445 | 34 | 108,714 | 104,268 | + | 4,446 | 1 Mg. Db. | 91½ | 42 | 94½ | 4½ |
| | Midland of W. Australia .. | 1,903 | 3.3.34 | 39,690 | — | 1,960 | 49 | 1,679,905 | 1,737,261 | — | 57,356 | Inc. Deb. | 89 | 70 | 96½ | — |
| | Nigeria | 1,538 | Feb., 1934 | 140,537 | + | 32,003 | 21 | 755,254 | 531,978 | + | 223,276 | 4 p.c. Db. | 98½ | 80½ | 101 | 3½ |
| | Rhodesia | 1,538 | Feb., 1934 | 140,537 | + | 32,003 | 21 | 755,254 | 531,978 | + | 223,276 | — | — | — | — | — |
| | South African | 13,180 | 24.3.34 | 457,536 | + | 66,380 | 52 | 23,264,166 | 20,231,517 | + | 3,032,649 | — | — | — | — | — |
| | Victorian | 6,172 | Jan., 1934 | 806,239 | — | 59,834 | 30 | 5,113,895 | 5,386,185 | — | 272,290 | — | — | — | — | — |
| Zafra & Huelva | 112 | Feb., 1934 | 10,346 | + | 264 | 8 | 23,255 | 20,970 | + | 2,285 | — | — | — | — | — | |

NOTE.—Yields are based on the approximate current prices and are within a fraction of 1%.
 † Receipts are calculated @ 1s. 6d. to the rupee. ‡ ex dividend. § Average rate of exchange for the week:—This year 3115½. Last year 4156½.

1999